ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANT OF SUCCESSFUL LOAN REPAYMENT PERFORMANCE IN PROJECT FINANCING IN THE CASE OF DEVELOPMENT BANK OF ETHIOPIA

BY

AYELE SHIREGA

JANUARY, 2016

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ACCOUNTING AND FINANCE

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DECLARATION

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

Ayele Shirega _____

Name Signature

St. Mary`s University college, Addis Ababa January, 2016

ENDORSEMENT

This thesis has been submitted to St. Mary`s University, school of Graduate studies for examination with my approval as a university advisor.

Zenegnaw Abiy (PhD) _____

Advisor Signature

St. Mary`s University college, Addis Ababa January, 2016

ABBREVATIONS & ACRONYMS

AM	Accessibility of Market
AML	Amount of loan
ARM	Availability of raw material
DRS	Debt rating scale
DBE	Development Bank of Ethiopia
DFPLRM	Distance from project location to raw material destination
DFPLPM	Distance from project location to output product market
EL	Educational level
EDR	Equity debt ratio
ELT	Experiential Learning Theory
LPT	Loan processing time
MEPM	Managerial experience of Project manager
NPF	Number of Project Follow-up
PIP	Project Implementation period
PMB	Project Management book
SLR	Successful loan repayment
TM	Type of management
TMFCF	Type of market for the commodity financed
WBS	Work breakdown structure

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ABSTRACT

This study assesses the determinants of successful loan repayment performance of project financing in the case of Development Bank of Ethiopia. The study used explanatory design and quantitative research approach. Secondary data was used. The collected data were taken from individual borrowers' files. Hence the total population was seventy five (75), of which 40 (53%) were successful financed projects (non-defaulters), whereas the rest 35 (47%) were non-successful ones (defaulters). The variables used in the study are accessibility of market, amount of loan, availability of raw material, distance from project location to raw material destination, distance from project location to output product market, educational level, equity debt ratio, loan processing time, managerial experience of project manager, number of project follow-up, project implementation period, type of management and type of market for the commodity financed. In the study, probit model was used to identify variables which determine successful loan repayment performance. The paper reveals that the managerial experience of project managers, loan processing time, educational level, number of project supervisions/ follow-ups by the bank, equity-to-debt ratio, delay in project implementation period and type of management for the financed projects were statically significant determinant of loan repayment performance of DBE's financed projects. However, the analysis of the marginal effect shows that equity-to-debt ratio of borrowers is the most important determinant among the other six variables. The policy implications of the study suggest that Development Bank of Ethiopia should intensify its project monitoring and follow-up work in order to make well-informed decisions and provide technical assistance for its credit-assisted projects; increase debt–to-equity ratio of the borrowers to make the borrowers more ethically responsible; give due attention to minimize the bureaucracy that delays the loan processing time; critically analyze the project implementation period at the time of appraising projects and enhance its project implementation capacity; identify and redress the root causes of project delays; and improve its efficacy of customer recruitment system by giving special considerations to educational level of borrowers, managerial experience of project managers and type of management, among others.

Key Words: Project financing, loan repayment, probit model

CHAPTER ONE
INTRODUCTION

1.1. Background of the study

Loan means any financial facts of a Bank arising from a direct or indirect advance or commitment to advance funds by a Bank to person that are conditional on the obligation of the person to repay the funds either on specified date or on demands usually with interest (Adrian & Ciornelis 1990).

Since loan portfolio is the largest asset and predominant source of revenue, effective management of credit function is fundamental to the Bank safety and soundness (Adrian & Ciornelis 1990).

Financial sectors play a critical role for the growth and development of a country. One of the financial institutions that play an intermediation function by mobilizing money from those who have excess fund and lend it to others who need it for their investment are Banks. As a result, providing credit to borrowers is one means of which Banks contribute to the growth of economy, thereby ensuring that the money available in economy is used for productive and fertile project purpose which can stimulate the economy as well. Hence, proper management of credit not only has positive effect on the Banks performance but also on the borrower firms and a country as a whole.

For that reason, Bank lending is guided by credit policies which are guidelines and procedures put in place to ensure smooth operations. Bank lending, if not properly assessed, involves the risk that the borrower will not be able to pay or willing to honour their obligation (Martin, 2007). In order to lend, Banks accept deposit from public against which they provide loans and other forms of advances and bear a cost for carrying this deposit. Banks undertake lending activities in order to generate revenue. The major source of revenue comprises margin, interest, fees and commission (Martin, 2007).

Beyond the urge, to extend credit and generate revenue, Banks have to recover the principal amount in order to ensure safety of depositors` fund and avoid capital erosion. Bank lending therefore, has to consider interest income, cost of funds, statutory

requirement, and depositor needs and risk associated with loan proposals. For these reasons Banks have overtime developed credit policies and procedures which stipulate the lending process. This process includes among others the credit appraisal, documentation, disbursement, and monitoring and recovery process of lending. However, Banks have continued to face an average of between 20-40% bad debt written off yearly (Martin, 2007).

Development Bank of Ethiopia is one of the financial institutions play a critical role for the growth and development of a country. It is a specialized Bank established to spur the national Development agenda. The Bank's focal point is the provision of customer focused lending to viable projects in line with government priority areas by mobilizing fund from domestic and foreign sources while ensuring its organizational sustainability. Hence the ability to collect the amount of loans disbursed to the client is crucial for the long term sustainability of project financing institution like DBE.

When it comes to the history of the Development Bank of Ethiopia, it goes back to 1909, and currently the key mandate of the Bank is the provision of Development credit to viable priority area projects along with technical support and advice by mobilizing resources from domestic and foreign sources. DBE continued to extensively provide financial and technical support to government priority economic sectors i.e. commercial agriculture, agro-processing, manufacturing and extractive industries. As it has been doing for over hundred years, DBE has remained dedicated to assisting the development endeavors of the country through availing financial and technical assistance to viable projects in accordance with government policies. However, availing loan to borrowers is not an easy task; this is because of the high financial risk of the Bank as a result of failure to collect the disbursed loan from the customers. Currently the Bank have Head office, 5 regional offices, 15 branches and 20 sub branches strategically located all over the country for its smooth operation. The Bank, from its inception up to now renders in project financing in different sectors like commercial agriculture, Agro processing, Manufacturing and extractive industry.

According to the respective years' Annual Performance Report of the Bank, average loan recover performance of the Bank for the period 2008/09 to 2014/15 shows 50%. As a result, such huge gap experiencing in the Bank leads to reduction of the profitability of the

Bank and even hinder economic growth of the country as it goes by this rate.

Therefore, this paper analyzed the determinant of successful loan repayment performance in project financing through different determinants and contribute to loan collection of DBE and suggested sound strategy for decision makers on how to increase the loan collection of the Bank.

1.2. Statement of the problem

Effective control of loan repayment is critical for sustainable and healthy growth of the Banking sector especially for those predominantly engaged in provisioning loans. In other words, the determinants of successful loan repayment performance in project financing have to be properly investigated because the survival and the sustainable operation of such institutions are directly influenced by these factors. Therefore, investigation of the major determinant for successful loan repayment of Banks is especially essential for project financing Banks.

Any loan granted by a financial institution is generally provided at a cost, referred to as interest on the debt, which is the primary incentive for the lender to engage in this loaning activity. And In such loan, each of these obligations and restrictions is enforced by a contractual agreement or loan covenants between these stakeholders that clearly states the rule of the game agreed upon by both parties on the different aspects including the purpose, disbursement schedule, repayment period and the charges associated with the loan.

In the area of loan repayment performance researches have been done by Kibrom (2010), Mulugeta (2010) and Muluken (2014) under the Development Bank of Ethiopia. Kibrom, (2010) research had been conducted on Mekele branch specific to private borrowers. Mulugeta, (2010) research had been conducted specific to agricultural borrowers. Muluken, (2014) on his research had been conducted specific to floriculture growers' borrowers. This research work is differing from that of the above mentioned researchers in that: it has included all sectors of the financed project at head office; as a result it represents the big picture of the Bank. Because the total loan portfolio concentration at head office takes a share of 85% which is the Bank`s representative. Secondly, the collected data of successful financed project were taken from the settled financed project to

identify the success factors, whereas those researchers have used only the status of the project on the period in which they have conducted to measure the success factors of their research works. Hence, the researches output could not fill up the gap on loan repayment performance of the Bank.

As per data obtained from the central database of the Bank, the loan recovery performance trend for the last five years 2010/11, 2011/12, 2012/13, 2013/14 and 2014/15 shows 41%, 70%, 51% 41% and 47% respectively (Central Database of Development Bank of Ethiopia annual reports). This shows that the yearly loan collection of the Bank could not cover the total amount of demand/due. Additionally, the NPL ratio of medium and long term loans of the Bank for the last five years 2010/11, 2011/12, 2012/13, 2013/14 and 2014/15 shows 9.73%, 8.36%, 8.62%, 8.2% and 12.54% respectively. Despite such a huge gap, no representative study has been done to investigate the factors that contribute to the poor performance in loan recovery through assessing the successful projects financed by the Bank.

It is the aforementioned evidence that motivated the researcher to identify the major factors that determine successful loan repayment performance in the Development Bank of Ethiopia.

There were few other studies that have been conducted on the determinant of loan repayment performance under micro finance institutions in Ethiopia by, Abraham,(2002), Jemal, (2003), Mengistu (1997) and Bekele et al. The research works largely focus on repayment performance of smallholder farmers in case of different microfinance and NGOs in different region of the country. As per DBRS(Debt Rating Scale) policies short-term creditors, by granting loans, assume less risk than long term creditors because there is less chance of substantial change in the financial soundness of the creditors within a few week's or month's time. Thus, this study has mainly focused on identifying the determinants of medium and long term project financing whereas the above stated research works have generally emphasized on short term loans. Hence, the study has focused on this important issue and has investigated and believed to have a positive outcome for the manager's of Development Bank of Ethiopia and the policy makers and regulators in general.

Therefore, the main purpose of this study is to analyze determinants of successful loan repayment performance and explore the determinants of successful loan repayment by taking a project financed borrowers' financial data from Development Bank of Ethiopia. The outcome of the research could enable the Bank to know the key determinants for successful project financing and act accordingly. Moreover, probit model has been employed to quantitatively examine the determinants of successful loan repayment in the case of Development Bank of Ethiopia.

1.3. Objectives of the study

1.3.1. General objectives

The main objective of the study is to identify the determinants of successful loan repayment performance in project financing in the case of Development Bank of Ethiopia.

1.3.2. Specific objectives of the study

- To analyze the impacts of project manager behavioral study
- To investigate the impacts of lender's (DBE) attributes
- To explore the role of input availability
- To find out the impact of output product market access
- To examine the impact of equity to debt ratio
- To determine the impact of distance from input and product to market

1.4. Hypothesis of the study

Various quantitative research proposals and writers use research questions Habtamu (2012). On the other hand, a more formal statement of a research employs hypotheses. These hypotheses are predictions about the outcome of the results to be estimated (more or less high, lower of something). Therefore, the study has been tested based on following hypotheses.

- Hypotheses 1: successful loan repayment of the clients is positive and has significant relationship with loan possessing time.
- Hypotheses 2: type of management is positive and has significant relationship with successful loan repayment of the clients.

- Hypotheses 3: there is a positive and significant relationship between managerial experience of project manager and successful loan repayment of the clients.
- Hypotheses 4: client`s successful loan repayment is positive and has significant relationship with education level.
- Hypotheses 5: equity to debt ratio is positive and has significant relationship with successful loan repayment of the clients.
- Hypotheses 6: number of project follow–up has positive and has significant relationship with successful loan repayment of the clients.
- Hypotheses 7: successful loan repayment of the clients has positive and significant relationship with delayed project implementation period.
- Hypotheses 8: type of market for the commodity financed has positive and significant relationship with successful loan repayment of the clients.
- Hypotheses 9: there is a positive and significant relationship between amount of loan and successful loan repayment of the clients.
- Hypotheses 10: client`s successful loan repayment is positive and has significant relationship with availability of raw material
- Hypotheses 11: distance from project location to input raw material is positive and has significant relationship with successful loan repayment of the clients.
- Hypotheses 12: market accessibility to the output products is positive and has significant relationship with successful loan repayment of the clients.
- Hypotheses 13: client`s successful loan repayment is positive and has significant relationship with distance from project location to output product market

1.5. Operational Definition Term

1.5.1. 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 and takes one and zero for the project financed borrowers which could not paid its debt based on their contract. 1 for those financed projects that have fully paid its debt based on the contractual agreement from the cash flow of the project. 0 for those financed projects that do not able to pay its debt based on the contractual agreement.

1.5.2. Independent (Explanatory Variables)

Number of Project Follow-up (NPF) it is a discrete variable and been 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 Koopahi and Bankhshi (2002), Wongnaa and Awunyo (2013), Mulugeta(2010) and Muluken(2014).

Equity to Debt Ratio (EDR) it is a continuous 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).

Managerial Experience of Project Manager (MEPM) it is a continuous 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. Borrowers 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 Oladeebo (2008), Wongnaa and Awunyo (2013),Muluken (2014).

Education Level (EL) Level of education (measured in educational status of the borrower). 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 borrowers 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. Further various researcher were supported by Matin (1997), Kashulize (1993), Njioku and Odii (1991), Oladeebo (2008) and Amare (2002), Michael (2006), Muluken (2014) Ojiako and Ogbukwa (2012),Mulugeta (2010), Eze and Ibekwe (2007), Balogun and Alimi (1988) and Amare (2006) empirical studies noted that education has a positive impact on the repayment performance through increasing awareness of the customer to utilize the loan efficiently. The same result is happen in this study.

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 authors Balogun and Alimi (1988), Koopahi and Bakhshi (2002), Bekele (2003), Jama and Kulundu (1992), Hunte (1996), Njioku and Odii (1991), and Mulugeta (2010).

Amount of loan (AML) Defined as the amount of the loan in which the Bank releases to the respective borrowers. It is assumed that if the size of the loan is large, it would increase the interest and charges on the production process and affect the repayment performance negatively. In the contrary Bekele (2003) noted that, if the production capacity of the project can utilize the loan efficiently, it increases the loan repayment performance. Hence, the actual impact of the variable been determined in the analysis. This is also supported by Muluken (2014)

Type of market for the commodity financed (TMCF) Refers to the type of the project in which the loan is fully financed by DBE. It is a dummy variable taking a value of 1 if the project product is export market oriented and 0 otherwise. According to Mulugeta (2010),

Muluken (2014) a borrower who has engaged on export markets had a good record of repayment performance than if the commodity was produced for local market. It is expected to have a positive relationship with the dependent variable.

Delayed Project implementation period (DPIP) 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. Financed project operation started period. It is a categorical variable taking a value of 1 for the financed project operation stating period up to six month, 2 for project operation more than six month but less than one year and 3 for project operation exceed one year. It is assumed that projects in which lately implemented projects have lower repayment rate than implemented based on the expected period under the appraised document.

Type of management (TMGT): It is defined as the type project manager (either owner or employed) who is responsible for the overall operation of the project. It is a dummy variable which takes 1 if the project is managed by the owner manager and 0 otherwise. It is expected that if the project managed by the owner, they could take the responsibility and make correction timely at the time of facing the problem. This makes the project to be sustainable as a result the borrowers have paid its debt based on the contract. This in turn has a positive impact on the successful loan repayment performance. Hence, type of management is expected to have positive sign. It is supported by Muluken (2014)

Distance from Project location to input raw material (DPLRM). It is continues variable and measured by distance. It is the distance between the locations of the project to the place where the input raw materials are available. It is assumed that the availability of input material are very close to the project site, various logistics costs have decreases this in turn the project can able settle its debt based on the contract agreement.

Distance from Project location to output product market (DPLPM). It is continues variable and measured by distance. It is the distance between the locations of the project to the place where the output product market is accessible. It is assumed that the accessibility of output product market (the place where the target consumer) are very close to the project site, various logistics costs have decreases this in turn the project can able settle its debt based on the contract agreement.

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. Over the past few years, highly unstable prices in commodities markets have put financial pressure on many producers. Between 2003 and 2008, prices for many of the raw materials used for making industrial products (such as crude oil, steel and aluminum) and consumer packaged goods (such as paper, wheat and milk) rose at double-digit rates only to fall dramatically in the following year. Some sectors have recovered while others remain depressed, but the consensus is that more volatility and uncertainty can be expected going forward. Jeff Shulman, Andrew Corr and Patricio (2010). As a result of availability of input 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.

Accessibility of output product market (AM); it is a dummy variable taking 0 for borrowers that do not have access output product market and 1 for borrowers that do have access output product market.

1.6. Significance of the Study

According to the data obtained from central database of DBE, the loan recovery performance report of the Bank shows 47% as at June 30, 2015. This has an impact on the sustainable provision of credit to the potential investors and existence of the Bank as a financial institution. It is therefore, important for the financial institutions to devise a means of enhancing loan collection performance of the Bank. This can be achieved if the Bank identifies the determinants of successful loan repayment performance in project financing. Thus this study is for:

- Policy makers to formulate successful credit policies and programs that would in turn help in allocating financial resources effectively and efficiently.
- Managers clearly understand the extent to which the impact of loan possessing time, number of project follow-up, project implementation period, amount of loan, education level, type of management, type of market for the commodity financed, managerial experience of project manager, equity to debt ratio, availability of raw material, distance from project location to input raw material, market accessibility,

and distance from project location to output product market for the loan repayment performance.

- The management of the Bank can understand the determinants of successful loan repayment performance and evaluate the loan repayment performance.
- Helps other researchers to identify the factors behind successful loan repayment and to make research on related issues.

1.7. Delimitation/Scope of the study

The study is limited to Bank specific factors even though macroeconomics has a huge impact on loan repayment performance. Thus the study has explored Bank specific factors determining successful loan repayment in project financing. Hence the study covered the repayment aspect of Development Bank of Ethiopia and focused on the explanatory variable and the dependent variable like loan possessing time, number of project follow-up, project implementation period, amount of loan, education level, type of management, type of market for the commodity financed, managerial experience of project manager, equity to debt ratio, availability of raw material, distance from project location to input raw material, market accessibility, and distance from project location to output product market were associated with loan repayment. Borrower data have been taken only for the projects in which the Bank has financed between 2003/04 and 2007/08 fiscal year. This is because the credit terms of the financed projects were either medium or long term, as a result, to determine the success or fail factors of the projects it is mandatory to go back to the loan rendered period of the project to review the current status. The scope of the study has been restricted only to Head office borrowers' of Development Bank of Ethiopia, due to the portfolio of the Head office loan takes a lion share which is 85% of the total loan portfolio of the Bank. (DBE, 2015)

1.8. Organization of the study

The remaining parts of the thesis are organized as follows. The second chapter deals with theoretical and empirical literature review related to the topic. The third chapter of the paper describes the materials and methodology part of the paper. In the fourth chapter deals with empirical results and discussion is presented. Finally, in the last chapter constitutes the summary, conclusion and recommendation part of the thesis.

CHAPTER TWO
LITERATURE REVIEW

These sections have two parts which is the theoretical and empirical literature so as to analyze and identify the main determinants of successful loan repayment.

2.1. Theoretical review

2.1.1. Theory of project

Turner (1993) referenced in the (Project Management book) PMB Guide as starting point for a reconstruction of the theory of project. According to Turner, scope management is the raison of project management. He describes the purpose of scope management as follows: (1) an adequate or sufficient amount of work is done; (2) unnecessary work is not done; (3) the work that is done delivers the stated business purpose. The scope is defined through the work breakdown structure (WBS).What does Turner say, from a theoretical point of view? Firstly, he (absolutely) claims that project management is about managing work; this is the conceptualization. Secondly, he claims that work can be managed by decomposing the total work effort into smaller amount of work, which is called activities and tasks in the PMB Guide. Thirdly, he claims that this conceptualization and the principle of decomposition serve three essential purposes of project management. Even if not mentioned by Turner, there is an important, but implicit assumption associated with decomposition, namely that tasks are related if at all by sequential dependence. Indeed, a review of the PMB Guide reveals that activities and tasks are the unit of analysis in the core processes of project management, like scope management, time management, and cost management, and that their management and control is centralized. This is also supported by the description of Morris of the classic - and still current - project management approach as follows Morris (1994).

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. Weber's Least Cost Theory

Alfred Weber (1868-1958) formulated a theory of industrial location in which an industry is located where it can minimize its costs, and therefore maximize its profits. Weber's least cost theory accounted for the location of a manufacturing plant in terms of the owner's desire to minimize three categories of cost:

1) Transportation: the site chosen must entail the lowest possible cost of A) moving raw materials to the factory, and B) finished products to the market. This, according to Weber, is the most important.
2) Labor: higher labor costs reduce profits, so a factory might do better farther from raw materials and markets if cheap labor is available.
3) Agglomeration: when a large number of enterprises cluster (agglomerate) in the same area (e.g. city), they can provide assistance to each other through shared talents, services, and facilities(e.g. manufacturing plants need office furniture)

2.1.4. 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.

2.2. Credit (project financing)

Credit is defined as the power or ability to obtain goods and service in exchange for promise to pay for them later (Beckman and Foster, 1969). In a similar manner, credit is the power or ability to obtain money, through the crediting process, it come back for the promises to repay the obligation to obtain money, by the borrowing process, in return for the promises to repay the obligation in the future. Project financing is necessary in a vibrant economy because of time elapsed between the production of goods and its ultimate sale and consumption. The risk in extending credit is the probability that future payment by the financer of the project will not be made.

According to the financial institutions, formal financial institutions are regulated by central Bank supervisory authority for licensing and accomplishment of credit policy. They usually use legal documents or legal systems to enforce contracts. Formal credits are those released by financial institutions that are arranged and legally occupied in the provision of credit and mobilization of saving. In the context of Ethiopia, these institutions are regulated and controlled by the National Bank of Ethiopia (NBE). In the contrary, informal credits are provided by individuals, organizations and institutions that operate outside the legal Banking system and control of the national Bank. According to Bekelle, 1995, informal credit sources are categorized as commercial (those who lend money on short term basis to obtain profit) and non commercial (lenders that generally include friends, relatives and neighbors). Mutual help associations including are Idir, Iqub, modern cooperatives, NGOs, etc categorized on the potential source of informal financial services.

Successful borrowers/non-defaulters is credit worthy borrowers who paid/settled the due/debt amount on the due date signed on the contract. This entails that the clients are dedicated on the credit 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).

2.3. 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.

2.4. 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 fails, 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.

2.5. Managing Credit Facilities

Effective management of credit facilities is the most important function in lending for the credit officer or manager after completion of the preliminary process of evaluation of the proposal. The credit facility is nonexistent until the credit appraisal proposal is evaluated

thoroughly done in respect of qualitative and quantitative assessment techniques, premising the ultimate decision on historic facts and information and future projections obtained from the client.

The credit proposal for lending ultimately becomes a credit facility on completion of the evaluation procedure and decision to lend based on the agreement of the assessor and the approving authorities on the basis of facts consisting of the lending standards, it is referred to as the C's of lending, which are Capital, Capability, Character, Condition and Connection, among other considerations.

The competence of Management incorporating supervision, monitoring and control commences immediately after the feasibility study of the project transforms from application to an approved credit facility.

On the other hand, experience has verifies that most lending officers underplay the importance of credit control and administration in their function. They implement personal judgment in authorizing the project financing and disbursing such loans, hope that majority of them will be well with the customer, the project financing d and ultimately the Bank's money extended to the client in the facility. Although things do not work so easily most of time, in an unstable economic environment things change quite rapidly and hence a Bank is expected to exercise paramount caution so as not to be fixed because of poor administrative control of its loan portfolio. A client who is aware that the operations are not being closely monitored and every opportunity to be tempted to divert the original loan to riskier activities that could jeopardize the use of the funds, to the detriment of the Bank.

2.6. Criteria for Successful Loan Repayment

According to William (2007), there are certain criteria that most project financing r requires the business owner to meet it objectives the funds has to be released if the business needed. These hurdles or requirements are generally categorized as: Good Credit, Equity, Experience, Business Plan, and Collateral.

The above mentioned list of credit requirement five guidelines of successful borrowers are reviewed as follows;

1. Good Credit – it deals with the requirement that one must have worth credit history which is not only good, but more to the outstanding side of the scale. The logic behind

for the this lender requirement according to the writer is that, at any time borrowers are might coming to Banks and borrowers applying for loans for a variety of reasons. The credit officer and the lending institution's management have an obligation to manage the project to the positive benefit of the owners and the Bank. Thus, at the time of injection of a loan should be provided only to those who have the least risk of failure to repay. Past repayment history (i.e. good credit) is the first and probably the most important requirement for a successful loan.

2. Equity- in borrowing can be thought of as similar to a down payment. The lender wants the borrower to have a financial commitment to the venture for which the loan is requested. The writer say that the borrower has to have some "skin" in this business "game" to insure his or her best efforts toward success and timely repayment of the borrowed funds. The capital investment is seen also as a proof for shareholder's commitment in the business.This is to say, that even if all the other four criteria for successful borrowing; credit, experience, business plan, and collateral are met; the Bank usually will not lend 100 percent of the funds requested.

3. Experience-According to William (2007), no rational lender wants to or will turn over monies to a borrower to manage and expend in a business or venture in which the person has no or very limited experience. This measure for successful borrowing should be easy to see from both the lender and borrower's point of view. Lenders need to be more certain that the person or persons borrowing the funds have the experience and expertise to manage the money and in the day to day the business is conducted in a careful manner. It is needed to cover positive results from the business and further indemnify that the lender will be repaid with interest and in a timely manner. The more experience and talent the borrower has shown in the past, the lower the risk in lending from the Bank's point of view. The minimum numeric value often expected here is that the borrower should have at least three years of experience in the management of the type of business in whose name he or she is borrowing the funds. This experience can be as an owner and/or management experience. It could also be experience as an employee in a similar type business.
4. Business Plan- The fourth requirement of the Bank or lender is in depth analysis has been conducted, at the time of conducting the business plan of the project has to be researched and constructed business plan. This is a document in which:

a) Assumed to be introducing the business in a clear and complete manner;

b) Describes the business ,the potential market for the goods and service to be offered , the existing competition ,states who will be employed ,who will lead and manage and how the borrowed funds will be expended;

c) The good business plan will have pro-forma (estimated) financial documents. These are the cash flow statement, income statement, and balance sheet.

5. Collateral- Finally according to the writer, after a borrower have shown good credit worthy, put in equity cash or goods, shown he/she have experience in the business and produced a positive cash flow business plan. The lender would be willing to provide money to the borrower based on the fulfilment of appraisal requirement.

Supplementary forms of safekeeping the customer can provide the lender. Giving a lender collateral means that an own asset is mortgaged, such as a property, to the lender with the agreement that it will be the repayment source in case the loan is not repaid from the established sources as per terms and conditions agreed for the financing. A guarantee, on the other hand, is just that - someone else signs a guarantee document promising to repay the loan if the initial lender cannot. Some lenders may require such a guarantee in addition to collateral as security for a loan. Collateral is considered "the second way out" by the lender in case the credit goes wrong. (Dr.Mihaela, 2010)

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

2.7. Repayment of Bank loans

After the credit assessment and disbursement is done, the credit customer is expected to payback the installment as per agreed schedule. Each Bank has a different repayment mechanism. Based on the specifics of the Bank, customers can pay weekly, bi- weekly, monthly, quarterly, semi-annually or annually installments (Martin, 2007). In order to ensure good repayment, Banks have to ensure proper monitoring and follow-up actions.

2.8. Determinant of loan repayment performance

2.8.1. Loan processing time

Loan processing time it is defined as the time taking from credit application to first disbursement. The total loan processing time incorporate credit application to first disbursement. To finalize the process the Bank have passed the following four steps of functions have been undertaken such as due diligence assessment, credit appraisal study, credit approval and credit documentation.

2.8.2. Due diligence Assessment

This first steps of analysis of the borrower characteristics to go to the next step. Through conducting in-depth analysis of the creditor the credit officer either accept or reject the credit application based on the Bank criteria set. This is due to potential risk involved in a potential investment, a due diligence assessment is essential to the pre-funding commitment. The biggest investment a lender or creditor can make in a business is taking the time to determine the key aspects of the business environment, from the day-to-day operations practices, to human resource considerations, to the necessary practices to maintain customers. A due diligence assessment provides the answers to these questions, allowing creditors and lenders to decide if they are willing to proceed given the existing factors. As such, it is a helpful tool in making a more informed credit or investment decision.

Due diligence assessments also provide information which can be used when crafting lending or investment instruments for the benefit of lending or investing entities. Although the structure of each engagement is unique, projects typically focus on answering the following questions:

- Market positioning, including competition, capabilities, market dynamics by segment
- Execution capabilities, including strategy, management capabilities, cost structure, customer service, quality, product innovation
- Attainability of business plan and projections
- Cash flow forecast, quality of earnings and debt service capabilities

Focus Management Group rapidly assesses a company to identify key issues and drives; drawing conclusions regarding the advisability of the lender/investor to proceed with the transaction under consideration.

2.8.3. Credit appraisal study

This is the basic stage in the lending process. Anjichi (1994) describes it as the 'heart' of a high quality portfolio. This involves gathering, processing and analyzing of quality information as way of discriminating the client's credit worthiness and reducing the incentive problems between the lenders as principals and the borrowers as agents. The Bank's credit policy, procedures and directives guide the credit assessment process. Banks should base their credit analysis on the basic principles of lending which are Character, Capacity, Capital, Collateral and Conditions (Matovu and Okumu, 1996). It is designed to ensure lenders take actions which facilitate repayment or reduce repayment likely problems. This information about the riskiness of the borrower makes the financial institution to take remedial actions like asking for collateral, shorter duration of payment, high interest rates and other form of payment (Stiglitz and Karla, 1990) when a financial institution does not do it well, its performance is highly affected. Edminster (1980) stressed the importance of credit analysis when he observed that its abandonment often resulted into several Banks using credit card to process. The variable in the researcher, according to Hunte (1996) included the length of time taken to process applications, credit experience and proportion of collateral security to the loan approved. It was found out that long waiting time reflected a shortage of credible credit information required to make informed credit decisions. This in turn leads to greater risk more intense credit rationing and low repayment rates. Hunte (1996) also observed that loan experience indicated the ability to manage the business loans better hence good quality borrowers for the business. A less experienced borrower has less ability to manage a business loan and therefore is not credit worthy (Devaney, 1984; Robinson, 1962; Hunte, 1996). This implies that there are big risks associated with the financed project.

2.8.4. Credit approval

The loan approval process is the first step towards, holding of 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. The primary means to control loan quality is strengthen the 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.

An effective loan approval process establish minimum requirement for the information and analysis upon which accredit decision is based, it provides guidance on the documents needed to approve new credit, renew credit, increase credit to existing borrowing, and changes terms is previously approved credit. (Loan Portfolio Management.1998)

2.8.5. Credit Documentation

Credit documentation and disbursement is another aspect of credit assessment process. It encompasses the conduct of key exposure control measures that ensures securities and documentation is obtained before funds are disbursed, and that modification on all credit facilities is approved within credit policy. It also includes the maintenance of orderly updated credit files and the imposition of relevant fee's, updating of records and prompts notification of credit reviews and renewal dates (McNaught on et al, 1996) Loan documentation involves the legal drafting, document review, collateral checks and the waiver of terms. While the disbursement function involves checking the validity of notes as well as ensuring that the documentation for the credit facilities are properly executed. Loan documentation defines the necessary security and covenant before the loan is made. It provides risk protection by providing grounds for the Bank to take legal action when borrowers fail to honor their obligations (Dayetal, 1996). Credit documentations clearly states the credit terms which are the conditions attached to the loan after the borrower's loan application has been favorably appraised.

2.8.6. Project Implementation period

The projects are considered delayed when their stipulated completion durations have not been achieved. Project Implementation can be classified in to three main periods which is the inception, main implementation and final period (Particip Gmbh, 2002).

2.8.6.1. Inception Period

Project implementation begins with the inception period often covering a period of several months during which project organization including administrative, financial and technical responsibilities are set up, and the initial planning of the appraisal phase is updated and refined. The mechanisms and tools developed for this purpose are then used throughout the following periods of implementation. The inception period usually consists of the following elements:

• Set-up of the project office and staff recruitment;
• If required, implementation of a study to update baseline information;
• Discussions with major stakeholders, if possible including target groups, to complete and update the Logical Framework, to prepare the Overall Work Plan and the Activity and Resource Schedules. Ideally, this should be done in a participatory workshop session (which will last 3 – 5 days, depending on the complexity of the project);
• Preparation and submission of the Overall Work Plan (incorporating the project's internal Monitoring and Evaluation Plan) and of the first Annual Work Plan.

Very often, between the preparatory phase and implementation, a number of changes will have occurred in the project's context. This means that adjustments will need to be made in the logical framework to reflect these new circumstances. Often, a study will have to be undertaken, updating the baseline information and thus describing the situation at the start of the project. Its results will serve as an initial point of reference for the Indicators. The detailed Indicators should be developed and incorporated within the logical framework and the Activity Schedule before project activities begin. However, in no case should this revision substitute the drawing-up of basic indicators during the appraisal. (Particip Gmbh,2002)

2.8.6.2. Main Implementation Period

The main implementation period begins with the implementation of the first annual work Plan. In relation to the contract/financing agreement, the implementing agency will have particular responsibility for:

• The preparation of work plans covering each year of the project, taking into account the time taken up by the approval process;

- Planning and monitoring of implementation;
- The preparation and submission of progress reports, usually quarterly;
- The preparation and submission of an Annual Report every twelve months from the start of the project;
- The collaboration with external consultants responsible for evaluations and audits, if required. (Particip Gmbh,2002)

2.8.6.3. Final Period

The final period involves carrying out all the necessary steps to finalize the project. It will usually consist of arranging the deployment of human resources and handing over goods procured under the project budget to those stipulated in the relevant agreement. In addition, a final report should be prepared taking care to provide concrete recommendations for any subsequent possible action in the same field. The lessons learned and conclusions drawn from the project should allow a decision to be made as to whether or not a follow-up of the project should take place. The report should as well provide sufficient information to be used as a basis for reflection in discussing the preparatory phase of a next project and, to the extent possible, for further programming. (Particip Gmbh,2002)

After passed those the above mentioned steps if the project is not implemented its operation the projects are considered delayeded due to their stipulated completion durations have not been achieved. As a result the projects have incurred additional costs without generating cash inflow from the project.

2.8.7. Credit follow-up/ supervisory visits

It is an act of prudent Banking practice for Bankers from the point of disbursement of a loan to regularly monitor the client's utilization of the Bank's funds and the performance of the financed project from time to time and the ensuing life style of the client. these activities help to assertion that the borrower has utilize the fund for the approved business purpose is what the Bank's funds are being committed to, that the clients business is making the expected progress as a result of commitment of the credit facility and that the client has not abandoned the project, to commit the Bank's resources to fund a extravagant

life style that could endanger the Bank's resources. In the unusual extreme cases, effective supervision activities could lead to timely discovery of a fast deteriorating credit account that a quick action and decision could reveal. If the situation has challenged corrective action and redemption, the constant action could bring to an end and minimize losses by profession in the account and proceeding with the necessary steps for the Bank to recover whatever it maximally can (Osayameh, 1986). while regular re-assessments, monitoring and evaluation represent a very crucial part of the Banks own part of the strategic conditions subsequent to draw-down of a facility that forms the scheme of work for effective management of the credit facility from the point of approval to the point of liquidation.(Dr Adewale A. Alawiye-Adams, 2008)

To appropriately open up the subject of the strategies of credit supervision demands brief definitions of the central activities involved in credit supervision which includes, among others:

- A periodic re-assessment of the implementation of the individual credit approvals in line with the Banks credit policies, the specific provisions for each facility and the regulatory authorities' requirements for every class of existing loans.
- Monitoring of the use of the facility in strict conformity with the credit approval and
- Periodic evaluation of the state of the facility vis-à-vis the business of the client for control purposes as the need may arise. (Dr Adewale A. Alawiye-Adams, 2008)

According to Robinson (1962) and Anjichi (1994), many of the suffering and dissatisfactions of slow and distresses credits can be avoided by good loan supervision. Supervision helps keeping a good loan good. It may be visiting the borrowers' premises to investigate the general state of affairs and maintenance of plant and equipment. Insufficient maintenance is often an early sign of financial distress. Also to be observed is the state of employee morale and the physical stock of materials and finished goods. The general business policy and advice is considered. If a Bank is cleaning to business development it can revise its own credit and loan polices as well as advising its customers. Again keeping track of deposits and balances gives clue to the affairs of the borrowers. Hence, financial viability of any credit institution depends critically on selecting applicants who have a high probability of repayment and rejecting those who have a high probability of default

Sewagudde (2000). In doing so loan officers in such financial institution is put at risk and the organization as a whole. As a way of scaling down loan, the default problem Gontaez jega (1996) added a risk premium to the price of the loan to cover loan losses. This risk premium results from the fact that at the time of the loan request, the lender is unable to clearly identify which borrower would repay and which borrower would default, as actual default losses are not known until a scheduled repayments are due.

2.8.8. Output product market access

Access to output markets, ranging from small village-level markets to sophisticated export processors, is the key for small farmers to earn more from the sell of their produces. Poor farmers in remote areas appear to have limited access to output markets for their products. However, by assessing transport costs and focusing on multiple high values storable crops, opportunities emerge to create output market linkages with a rate of return that is very attractive to poor families (International Development Enterprises, 2008).

2.8.9. Management skills

Management skills are the process of running the affairs of an organization (Daft, Kendrick & Vershinina, 2008). It means working through other people in an organization towards the achievement of its goals and objectives. The process involves dimensions of planning, organizing, controlling and leading organizational resources to attain set objectives. Many studies on most borrowers' have found that they tend to start ventures with little or no managerial knowledge and experience. This lack of managerial skills/knowledge and experience in Enterprise management correlated with statistical significant low profits (Belcourt et al . 2011). Low-level education provides low-level self-confidence and self-reliance to the borrowers' to engage in business, which is continuous risk taking and strategic decision making process (Tripp, 2009).

2.8.10. Distance from project location

Industry location is a primary cause of spatial income inequality in developing nations. Their study focuses on thoughtful the process of spatial industrial variation: identifying the spatial factors that have cost implications for firms, and the factors that influence the location decisions of new industrial units. The analysis has two parts. First the authors

examined the contribution of economic geography factors to the cost structure of firms in eight industry sectors and show that local industrial diversity is the one factor with significant and substantial cost-reducing effects. They then show that new private sector industrial investments in India are biased toward existing industrial and coastal districts, whereas state industrial investments (in deep decline after structural reforms) are far less biased toward such districts. Somik Vinay Lall and Sanjoy Chakravorty 2005.

2.9. Empirical Studies

2.9.1. Empirical Evidence in the World

Various research works have been conducted on credit repayment in world among these research made in Iran and Bangladesh. Koopahi and Bakhshi (2002) to identify defaulter farmers from non-defaulters of agricultural Bank recipients in Iran research have conducted using of a discriminate analysis. The researchers found that using of machinery, length of repayment period, Bank supervision on the use of loan had statistical significant and positive effect on the agricultural credit repayment performance. In the contrary, incidence of natural disasters, higher level of education of the loan receiver and length of waiting time for loan processing had negative effect on dependent variable. Other study has been conducted at Bangladesh on the loan repayment performance of borrower obtained a statistical significant positive relationship between households asset/income position/ and its loan default status. Matin (1997) has conducted a on the impact of loan repayment performance and the output of the research shows that borrowers having relatively small loan size have a very strong demonstration compared to loans which large in size. The education statuses of the households were strong positive effect on non-defaulter status irrespective of the household's income position. Other variable which is land-holding of the households were negatively affected with the loan repayment. In addition to that Reza and Mansoori (2008) had studied the factors that influencing the loan repayment performance, they used a logit model and the output were the farmer's experience, income, received loan size and collateral value, have a negative effect, whereas the loan interest rate, total application costs and number of installment have a negative effect on repayment performance of borrower.

2.9.2. Empirical Evidence in Africa

There are few studies have been conducted on credit repayment in Africa among these research made in Malawi, Nigeria and Tanzania. The probability of agriculture credit repayment indicated that crop sales, income transfers, degree of diversification and quality of information are positively related with credit repayment. While the size of club is negatively related the probability of repayment. Factors like amount of loan, sex, household size and club experience were found to be insignificant. (Chirwa, 1997). According to Geraid & Deograties (2013) study on credit rating and loan repayment performance indicated that years of experience in running the project, age , credit rationing , loan diversion, business management skills, alternative source of income , unfavorable weather conditions, amount of loan obtained by farmers, years of farming experience with credit use and level of education were the major factors that positively and significantly influenced loan repayment are among factors which influence loan repayment performance. From the other perspective of viewing the impact of credit risk management on the performance of commercial Banks in Nigeria, the study used the panel regression model and came up with the Bank's nonperforming loans from their loan portfolios is caused by poor credit risk management practices of the Bank. (Idowu, 2014).similarly Oladeebo etal (2008) had examined socio-economic factors such as amount of loan repaid, amount of loan collected and spent on agricultural production, annual net farm income, age, farm size cultivated, farming experience with credit use, and level of education influencing loan repayment among small-scale farmers in Ogbomoso agricultural zone of Oyo State of Nigeria. Among them amount of loan obtained by farmers, years of farming experience with credit use and level of education were the major factors that positively and significantly influenced loan repayment. However, age of farmers influenced loan repayment negatively but significantly. To determine loan repayment decisions among farmers in Southwestern Nigeria during 2005 study were conducted. The Data were collected from 180 respondents by multistage sampling technique. The results of the Tobit regression model has showed farming experience, farm location, and cost of obtaining loan, visitation, borrowing frequency, age of the beneficiaries, household size, level of education, occupation, amount of loan and education as important factors in determining loan repayment. Olagunju and Adeyemo (2007), Eze and Ibekwe (2007) , Oladeebo (2008). In the contrary age of the borrowers, house hold expenditure and house hold size have

negative influence on loan repayment performance with house hold expenditure being insignificant Oladeebo (2008).

Okovie (1996) in his study on major determinants of agricultural small-holder loan repayment in Nigeria reported that four factors had a tremendous effect on loan repayment performance. These factors include time of loan disbursement, nature of loan disbursement (in cash or in kind), number of supervisory visits made by credit officers after disbursement and profitability of enterprises on which loan funds were invested.

various research work have been conducted with a topic name of major determinants of small scale holder for loan repayment, determinant of agriculture loan repayment performance and factors influencing defaults in loan repayment are also researches made, by using Tobit and linear regression modal and showed time of loan disbursement, level of education, attitude towards repayment, farm income and off-farm income, nature of loan disbursement (in cash or in kind), number of supervisor visits made by credit officers, family dependency level, total farm cost and income of beneficiary, government policies, are major factors that also influenced default in loan repayments. Kashuliza (1993) in the topic of the impact of market access on input use and agricultural productivity: evidence from machakos district, kenya Studies have shown that improvement in market access increases productivity, firstly by facilitating specialization and exchange transactions in rural areas and secondly through intensification of input use. The extent to which specialization and intensification contribute to productivity and how this increase is distributed across farmers of different farm sizes and resources will be presented in this paper. The output generated from a variance analysis is used to develop and estimate a three stage least square regression model. The model is used to assess the effects of market access on agricultural productivity, and the distribution of market generated benefits among small and large farmers. Agrekon (2004)

Jama and Kulundu (1992) in their study on small-holder farmer's credit repayment performance in Kenya were used two stages least squares method to deal with indignity problem of the loan diversion where the loan repayment was used as dependent variable. Farm income, farmer's attitude toward loan repayment, proper amount of purchased farm input and source of income from farming activity had statistically significant effect on loan repayment performance. They also found that the proportion of loan funds diverted to non-

intended purpose was positively to the proportion of arrears on loans. In addition late loan issuing and inadequate supervision and advice to farmers were positively related to the proportion of loan diverted.

Hunte (1996) has been used the logistic regression model in Guyana showed that certain factors such as activities in fishing, male borrowers in food crop and live-stock credit experience and sugar cane production resulted in low default risk, minimum or low credit rationing (giving nearly the amount the borrower requested or demanded) and high repayment performance. On the other hand, other factors such as extending grace period in loan agreements and long processing times led to high default risk and low repayment performance. Likewise, the result of the study obviously showed that wealthy borrowers exhibited poor credit repayment performance.

Balogun and Alimi (1988) were identified the major causes of loan default as loan shortages, delayed on time of loan delivery, small farm size, high interest rate, age of farmers, poor supervision, non profitability of farm enterprises and undue government intervention with the operations of government sponsored credit programmes.

Njoku and Odii (1991) studied determinant of loan repayment under the social emergency loan schemes in Nigeria. Their study showed that late disbursement of loans, complicated loan processing procedure and loan diversion to non agricultural enterprise which are low enterprise returns resulting from low adoption rate of improved rate of improved agricultural technology and underline on political consideration in loan approvals contributed to poor loan repayment performance of small holders. Loan volume, years of formal education, household size and interest paid on loan were found to positively and significantly affect loan repayment; while years of farming experience, loan period, farm size, farming as a major occupation, farm output and value of assets were found to negatively and significantly affect loan repayment.

Wongnaa and Awunyo (2013) examined factors affecting loan repayment performance among yam farmers in the Sene District, Ghana the study results from the probit model showed that education, experience, profit, age, supervision and off-farm income have positive effects on loan repayment performance. Conversely, gender and marriage have negative effects on loan repayment while the effect of household size was found to be ambiguous.

The results of the logit model shows that education level of borrowers has major and positive effect on loan repayment performance of DBE`s borrower. This was because of the fact that project financed borrowers, who have higher education status, could find superior market for their products, they might be cost conscious that is economical usage of resources and they might have future investment plan working with the Bank. These and other reasons make the borrowers who have a higher education status to have a good repayment performance. This study result is in a complete agreement with the study made by Kashuliza (1993), Njioku and Odii (1991)

All the above researches works were focused on the determinant for credit repayment; the conducted research is based on their own specific sectors, subsector, projects and countries. However, the laws of Banking practice are diverse from country to country. Comparing of their central Bank policies regarding financing of project might not alike with that of National Bank of Ethiopia. It is to be noted that the role and the mission of Development Bank of Ethiopia is significantly different from other commercial Banks in Ethiopia. Thus undertaking the research works on the determinate factors of successful loan repayment performance in the case of Development Bank of Ethiopia without doubt come up with unique result.

2.9.3. Empirical studies in Ethiopia

There are few studies have been undertaken on determinant of successful loan repayment performance in Ethiopia. The existing literatures focused on smallholder farmers in case of different microfinance and NGOs in different region of the country. Therefore the empirical studies existing as follows;

The determinants of successful loan repayment performance of private borrowers in the case of Development Bank of Ethiopia, North Region and Zeway research and had been conducted. The studies mainly focused on a single branch borrower's characteristics, source of income, education, work experience, project characteristics and loan characteristics are variables that determine successful loan repayment performance of the borrowers in Development Bank of Ethiopia North Region. To identify the factors behind successful loan repayment performance of the borrowers a probit model is used. The data used in the study is gathered through survey on 100 respondents that are carried out in two

branches. The result of the study shows that educational level of the borrowers, repayment period of the loan, availability of other source of income, sector, purpose of the loan and type of labour determine successful loan repayment performance of the borrowers positively and significantly. Other variables such as, gender and household size have positive sign, but are not statistically significant. Moreover, variables such as age, loan diversion, other source of credit show negative sign but not statistically significant. The variable experience is statistically significant but show negative sign. Kibrom (2010), Abrham (2002)

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. 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.

In the topic of repayment performance of the borrowers of micro enterprise in Awasa and Bahirdar towns a research study had conducted by using binomial mode. The result of the study shows 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. Mengistu (1997)

Also another research works has been conducted 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 the research methodology, 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, suitability of repayment period, use of financial records, adequacy of supervision visits made to a borrower, location of residence of borrower, number of dependents number of times borrowed. The results of the descriptive statistics and the logit 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 Jemal, (2003).

2.9.4. Knowledge Gap

In the area of the determinant of loan repayment performance research have conducted at western European and other African countries. However, the economical performance, political, social and cultural factors are various from country to country. As a result the identified determinant factors might not use for Ethiopia in general and in particular DBE. Additionally, 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 financer.

Moreover, the researcher has used data of the financed project in which provided in the year 2003/04 to 2007/08 because the bank has used the new management tools that is BPR and the Ethiopian economy has started increasing of economic growth. In that specific period no study has conducted to identify the determinant factors of successful loan repayment performance.

This research work is differing from the conducted research work at DBE are: the researcher has used new variables such as availability of raw material, accessibility of output product market, project implementation period, distance from project location to output product market and input raw material to identify the determinant of successful loan repayment performance in project financing. From this variable project implementation period has statistically significant variable for the successful loan repayment performance of project financing. Whereas, the rest of the variables in which used in the study have statistically insignificant for the success of the loan repayment performance of project financing. Thus, the researches output could not fill up the gap on loan repayment performance of the Bank.

Hence, this research will fill the gap by analyzed the determinant of successful loan repayment performance of the financed project.

CHAPTER THEREE
RESEARCH DESIGN AND METHODOLOGY

This chapter deals with the research design and methodology. The chapter is organized in to five sections. The first section 3.1 explains the research design. Population and sampling technique is presented in section 3.2, in section 3.3 sources and tools/instrument of data collection, Procedures of data collection discussion in section 3.4, methods of data analysis has been discusses in section 3.5, descriptive statistics of the study has discussed in section 3.5.1, in section 3.5.2 econometric data analysis of the study has been presented and finally in section.

3.1. Research Design

The research design employed is explanatory. The methodology to carry out the research is based on the objectives of the paper and the availability of relevant information. To comply with the objective of this research, the paper is primarily based on quantitative research, which constructed an econometric model to identify and measure the determinants of successful loan repayment in project financing. To measure the effect of determinant on successful loan repayment performance of the financed project, probit regression analysis model is adopted. 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.

Information obtained from the Development Bank of Ethiopia Head office includes:

- Information on project financing like repayment period, loan disbursement and collection, loan statement from Finance Accounts Management Process.
- Loan officer's visits/loan follow-up documents have to be taken from individual borrowers file at loaning units.

- Debt to equity ratio is taken from project follow up report and in the appraisals study of the individual borrower file.
- Type of management, educational level of the manager, number of years of experience documents have to be taken from individual borrowers file at loaning units, and
- Availability of raw material and accessibility of product market related information can be obtained from supervisor report of the individual borrowers file at loaning units.
- Distance from project location to the input raw material and output product market is taken from appraisal study document of the individual borrowers file.

Regarding sources of data, the study has used secondary data source only. To collect the secondary source of data the researcher have been used the individual project financed appraisal study documents, follow-up report, project audited financial statement and the project recruited manager from the Bank document. To analyze the project performance quantitatively first define the variables and segregate the measurement of all explanatory variables and dependent variables based on their measurement criteria.

3.2. Population and Sampling Technique

According to the central data base of the Bank, a total of 75 projects have been financed at Head office level in between 2003/04 to 2007/08 in which the projects expect to settle its debt up to June, 2015. The research constituted Seventy five financed project borrowers of DBE and the populations are taken for the study.

3.3. Types of Data and Tools/Instruments of data collection

In order to carry out any research activity, information should be gathered from proper sources. To comply with the research objectives, the researcher has focused only secondary data, which shall be collected from DBE data base and individual borrowers' file, which are not manipulated for other studies. Hence, source of data for the analysis of the determinant of successful loan repayment performance of the financed project were the individual borrower file and financial reports of the borrowers'. According to the researcher specific objectives to identify the determinants of successful loan repayment performance, needs only the past and current status of financed projects. The data were collected and analyzed for the financed project for the period between 2003/04 to 2007/08

in which the maturity period of the project up to June 2015. The data were collected using a standard format prepared for the purpose of collecting all the necessary information from the individual file.

3.4. Procedures of data collection

The data were collected from secondary data source only. Before distributing the format to the selected data inputer, pre-testing was conducted on few projects to test the relevancy and accuracy of the designed format and to know how the data inputer understand the format. The format was revised based on the pre-test information. The data inputer has been informed that, the collected data is confidential, be reported in aggregate and used for academic purpose only. The data have been collected by using the format prepared for this purpose to head office loaning units and accounts management process by the trained data collector and the researcher.

3.5. Methods of Data Analysis

The collected data have analyzed by using descriptive statistics, and Econometric analysis methods using software called STATA version 14.

3.5.1. Descriptive statistics

The descriptive statistics showed that the mean of all independent variable with respect to dependent variable. Under this research works the researcher have been reviewed relationship between the dependent variables with independent variables and the correlation coefficient of the variable were used to describe the socio economic characteristics of the project borrowers/mangers and the institutional factors. This can be used to examine the linear relationship between the explanatory variables to investigate colinarity problem between variables.

3.5.2. Econometric Data Analysis

The successful loan repayment performance of financed project is measured on payment effected fully in their debt based on the contractual agreement. The financed project borrowers are either fully paid its debt according to the contractual agreement or not. The probit model was chosen from other similar models such as linear probability. Linear Probability Model (LPM) is plagued by several problems such as non-normality and

heteroscedasticity of the error term, possibility of the dependent variable laying outside 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.

$$SLR = \Pr\ (SLRi = \frac{1}{Xi}\ \ if\ SLRi = 0\ defaulter$$

$$SLR = \Pr\ (SLRi = \frac{1}{Xi}\ \ if\ SLRi = 1\ seccessful$$

The likelihood equation as presented by Long (1997) is

$$L\left(\frac{\beta}{SLR}, Xi\right) = \tilde{O} = \Pr\left(SLRi = \frac{1}{Xi}\right)\ \tilde{O}\left[1 - \Pr\ (\mathrm{SLRi} = \frac{1}{\mathrm{Xi}}\right]$$

$$SLR = 0, SLR = 1$$

Where the index of multiplication indicates that the product is taken over only for those cases, Where SLR=0 and SLR=1 respectively.

The model is thus specified as;

$$SLRi = \beta Xi + Ui$$

Where SLRi = Vector of Successful Loan Repayment Rate

Xi = Vector of explanatory Variables.

β = Vector of Unknown parameters.

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

Econometrics model were employed in order to analysis determinants of loan repayment in Development Bank of Ethiopia. After the data were gathered from the individual project

borrowers file the researcher feed in to Statistical Package Software for Social Science (STATA) has been used to analysis through probit regression models.

The Model specification as follow:

$$SLR = \beta 0 + \beta 1LPT + \beta 2TM + \beta 3TMFCF + \beta 4AML + \beta 5EDR + \beta 6PIP + \beta 7NPF + \beta 8EL + \beta 9MEPM + \beta 10ARM + \beta 11AM + \beta 12DFPLRM + \beta 13DRPLPM + Ui$$

Where:

SLR =probability of Successful loan repayment = $\ln(\frac{SLR}{1-SLR})$

LPT=Loan processing time

TM=Type of management

TMFCF=Type of market for the commodity financed

AML= Amount of loan

EDR = Equity debt ratio

PIP = Project Implementation period

NPF = Number of Project Follow-up

EL = Educational level

MEPM=Managerial experience of Project manager

ARM=Availability of raw material

AM= Accessibility of Market

DFPLRM=Distance from project location to raw material destination

DFPLPM =Distance from project location to output product market

β_0= intercept of the model

β_1, β_2, β_3, β_4 , β_5,β_6, β_7, β_8, $\beta 9$, β_{10} β_{11}, β_{12}, and $\boldsymbol{\beta_{13}}$ = slope of each independent variable and they measure by what extent affect the dependent variable, i.e loan repayment in this case.

CHAPTER FOUR
RESULTS AND DISSCUSSION

This chapter deals with the result of the study which includes descriptive statics 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, percentages, relationship between variables and correlation coefficient. Econometric analysis was carried out to identify the most important factors that affect loan repayment performance of project financed borrowers` and measure the relative importance of statistical significant explanatory variables on loan repayment. The researcher have been categorized the continuous variable by using frequency distribution formula for the descriptive part of the paper, whereas for the regression part of the study used without categorize the variables.

4.1. Mean of Demographic and Socio-Economic Characteristics of the Financed Project

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	0.371429	0.082866	0.206315	0.536542
Successful	0.725	0.0715	0.582534	0.867466

The loan repayment performance of the borrowers relative to their educational level as shown on table 1 shows that the successful financed project borrowers who run the project by BA/BSc or above has a mean value of 0.72, versus 0.37 for the defaulter borrowers whose educational level is diploma or below. This implies that most of DBE`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. Managerial Experience of Project Manger

Table 2 Mean of Managerial Experience of Project Manger

Over	Mean	Std. Err.	[95% Conf.	Interval]
Experience				
Defaulter	4.714286	0.646349	3.426407	6.002164
Successful	8.8	0.661389	7.482153	10.11785

As can be seen from Table 2 experience is the important element to run business project successfully. Similarly DBE has considered the experience when reviewed the borrowers file at the time of appraisal the project, whether the financed project management is capable or not to manage the business successfully. According to the results of this study, the experience of defaulter and successful financed project has an average years of DBE`s financed project managerial experience is 4.7 and 8.8 correspondingly. The minimum and maximum managerial experience was three and six for defaulter project while the successful project 8 and 10 years respectively. This implies that more years of managerial experience has an impact on the successful loan repayment performance of the Bank. It is supported by the experiential theory of Norel (2001) and Kolb and Kolb (2008).

4.1.3. Delayed Project Implementation Period

Table 3 Mean of Delayed Project Implementation Period

Over	Mean	Std. Err.	[95% Conf.	Interval]
Implemented				
Defaulter	2.371429	0.116574	2.13915	2.603707
Successful	1.325	0.09732	1.131086	1.518914

In Table 3 make sure that the delayed project implementation period (DPIP) of the financed project for the defaulter and successful financed project is a mean value of 2 and 1

respectively. This shows that DBE`s financed project is either successful or defaulter and financed projects have been started their operation within six month from the expected period and lately which has taken more than six month but less than a year. This entails that increase the dalliance project implementation period in turn decreased loan repayment performance and vis-à-vis. It is supported by (Particip Gmbh, 2002).

4.1.4. Input Raw Material Availability

Table 4 Mean of Input Raw Material Availability

Over **raw material**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	0.6	0.084017	0.432593	0.767407
Successful	0.65	0.076376	0.497817	0.802183

Raw materials are so important to the production process that the success of the project can be determined by the amount of natural resources. As can be seen from Table 4 certifies that the raw material availability of the financed project for the defaulter and successful projects were a mean value of 0.6 and 0.65 respectively. This indicates that there was no raw material problem in which project financed by DBE on both status either the defaulter or the successful projects. This explores that the impact of input raw material availability has low influence on successful loan repayment performance of the Bank.

4.1.5. Accessibility of Output Product Market

Table 5 Mean of Accessibility of Output Product Market

Over **Accessible**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	0.542857	0.085434	0.372627	0.713088
Successful	0.85	0.057177	0.736072	0.963928

Table 5 declares that the output product market/ target consumer/ of the financed project for the defaulter and successful projects are a mean of 0.54 and 0.85 respectively. This indicates that there was more problem on accessibility of output product market on DBE`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.

4.1.6. Type of Management

Table 6 Mean of Type of Management

Over **Management**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	0.428571	0.08487	0.259465	0.597678
Successful	0.35	0.076376	0.197817	0.502183

Table 6 confirms that the type of project management for the financed project mean of the defaulter and successful project are 0.43 and .35 respectively. This shows that most of DBE`s financed project managers were managed more by employed than owner manger. This implies that the project manger become employed mangers, the probability of successful loan repayment performance has enhanced when comparing with owner manger. Because, it is assumed that the project manger is owner manager or relative families the hired employee might not have expected educational qualification and experience rather put in place for the benefit of the family. It is supported by Agency Theory.

4.1.7. Distance from Project Location to Input Raw Material

Table 7 Mean of Distance from Project Location to Input Raw Material

Over **distance raw**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	166.8286	44.66929	77.82307	255.8341
Successful	668.175	261.6627	146.8007	1189.549

In Table 7 certifies that the distance from project location to input raw material for the financed projects, the mean value of the defaulter and successful project 166 KM and 668 KM were away from the project location respectively. This shows that most of DBE`s financed projects which incorporated under this studies, the input raw material were acquired from domestic/local market. This explores that the impact of project location to input raw material has insignificant influence on successful loan repayment performance of the Bank.

4.1.8. Distance from Project Location to Output Product Market

Table 8 Mean of Distance from Project Location to Output Product Market

Over	Mean	Std. Err.	[95% Conf.	Interval]
Distance from market				
Defaulter	4972.914	947.884	3084.214	6861.614
Successful	4603.575	787.9208	3033.609	6173.541

Table 8 authenticate that the distance from project location to output product market for the financed projects, mean of the defaulter and successful project 4972 KM and 4603 KM respectively were away from the project location. This shows that most of DBE`s financed projects are either defaulter or successful projects, the output product market were sold at international/ export market. In addition to that the financed projects in which included under this studies, distance from project location to output product market has insignificant effect on their success or failure of the projects if the logistic facility is fulfilled.

4.1.9. Type of Market for the Commodity Financed

Table 9 Mean of Type of Market for the Commodity Financed

Over	Mean	Std. Err.	[95% Conf.	Interval]
Market				
Defaulter	0.457143	0.085434	0.286913	0.627373
Successful	0.5	0.080064	0.340469	0.659531

Financial institutions used different loan classification methods to classify their loans. Similarly DBE has different ways of classification of loan to analyze its loan portfolio concentration. One of its loan classifications is based on the type of the projects product weather it is export oriented or domestic market oriented. Table 9 indicates that the type of market for the commodity financed project the mean value of the defaulter and successful project were 0.4 and 0.5 respectively. This shows that most of DBE`s financed projects were export oriented project.

4.2. Institutional Factors

4.2.1. Loan Processing Time

Table 10 Mean of Loan Processing Time

Over **Processing time**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	151.2	11.97236	127.3445	175.0555
Successful	104.45	5.351605	93.78669	115.1133

The Loan issuing/processing time is an important factor that affects the successful implementation of projects. For that reason it has a significant 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 the average time from application to first disbursement for financed project by DBE`s were taken about 151 and 105 days for the defaulter and successful projects respectively.

4.2.2. Loan Amount

Table 11 Mean of Loan Amount

Over **Loan amount**	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	1.74E+07	3651651	1.02E+07	2.47E+07
Successful	2.29E+07	3632486	1.57E+07	3.02E+07

It is defined as the amount of the loan that the Bank disburses to the respective project. According to the study result shows that, on average, the Bank was has disbursed a minimum and a maximum amount of Birr 10,200,000, and Birr 15,700,000 for the defaulter project and Birr 17,400,000 and Birr 24,700,000 for the successful project. The mean of loan amount disbursed by the Bank were Birr 22,900,000 and Birr 30,200,000 for the defaulter and successful projects in that order (Table 11). This reveals that most of the defaulter projects have no sufficient permanent working capital. It indicates that the amount of loan has an impact on successful loan repayment performance of the Bank. It is in line with Muluken (2014)

4.2.3. Number of Project Follow-Up

Table 12 Mean Of Number of Project Follow-Up/Supervisory Visit

Over Follow-up	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	1.056286	0.057934	0.94085	1.171721
Successful	1.63275	0.054275	1.524605	1.740895

Repeatedly makes Project supervision/ follow-up is an important factors of loan repayment performance of the financed project. As shown in Table 12 the study result indicated that, on average number of project follow-up/supervision have conducted in the individual project by the Bank one time for defaulter projects and two times for the successful project per annum.

4.2.4. Equity to Debt Ratio

Table 13 Mean of Equity-to-Debt Ratio

Over equity to debt	Mean	Std. Err.	[95% Conf.	Interval]
Defaulter	0.5	0.023093	0.453987	0.546013
Successful	0.56825	0.01633	0.535713	0.600787

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 financed project were 0.5 and .57 respectively. This indicates that equity to debts ratios of the financed project were almost of the same mean.

4.3. Relationship between Dependent Variable with Explanatory Variable

4.3.1. Educational Qualification of the Project Manager

Table 14 below summarizes the educational qualification of the project owner or employed manager of the borrowers. The result indicated that from the observed population 56% of them have BA/BSc degree or above education level whereas about 44% of them have less or equals to Diploma.

Table 14 Relationship with Educational Level

Educational	Status		Total
	Defaulter	Successful	
Diploma or Below	22	11	33
	2.8	2.5	5.3
	66.67	33.33	100
	62.86	27.5	44
BA/BSc or Above	13	29	42
	2.2	1.9	4.2
	30.95	69.05	100
	37.14	72.5	56
Total	35	40	75
	5.1	4.4	9.5
	46.67	53.33	100
	100	100	100

Pearson $chi^2(1) = 9.4707$ Pr = 0.002

The P Value of the result is .002 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 33% and 67% respectively and attended or graduated less than or equal to Diploma. On the other hand, about 69 % of successful projects and 31% of defaulters have BA/ BSc degree or above. From this we can understand that the probability of defaulters and successful projects in this observed population that have BA/BSc degree or above is 0.37 and 0.73 respectively. 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. Managerial Experience of Project Management

Table 15 below depicts the relationship between the project statuses with managerial experience. The result indicated that from the observed population , less than or equal to 5 years of managers experience who run the project 69% and 31% of the projects are defaulter and successful. In the contrary, those project managers who have 6 to 10, 11 to 15, and above years of experience the percentage of defaulter and successful projects are 37% and 63% , 0% and 100%,33% and 67% respectively.

Table 15 Relationship with Project Management Experience

Managerial experience	Status		Total
	Default	Successful	
Less or equal to 5 years	24	11	35
	3.6	3.1	6.7
	68.57	31.43	100
	68.57	27.5	46.67
6-10 years	10	17	27
	0.5	0.5	1
	37.04	62.96	100
	28.57	42.5	36
11-15 years	0	10	10
	4.7	4.1	8.8
	0	100	100
	0	25	13.33
Greater than 15 years	1	2	3
	0.1	0.1	0.2
	33.33	66.67	100
	2.86	5	4
Total	35	40	75
	8.9	7.8	16.7
	46.67	53.33	100
	100	100	100

Pearson $chi^2(3) = 16.7177$ Pr = 0.001

The P Value of the result is .001 which is less than the minimum P value=0.05 thus the relationship between the status of the project and educational level of managerial experience has strong relationship. Percentage of years of managerial experience who have less than or equal to 5 years, 6 to 10, 11 to 15, above for defaulter and successful 69%,28%,0%, 3% and 27%,43%,25%,5% respectively. From this we can understand that the probability of defaulters increases when number of years of experience decreases. In the contrary, increase numbers of experience years simultaneously increase the successfulness of project. This implies that the number of years of experience increases the probability of loan repayment performance of the financed project have increase.

4.3.3. Delayed 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 up to six month and on the expected period take 12% and 88 % of the

projects are defaulter and successful. Project implemented between 6 and 12 and above 12 months the percentage of defaulter and successful project are 67% and 33%, 85% and 15%, respectively.

Table 16 Relationship with Delayed Project Implementation Period

Project lately Implemented from the expected period	Status		Total
	Defaulter	Successful	
up to 6 months	4	30	34
	8.9	7.8	16.6
	11.76	88.24	100
	11.43	75	45.33
between 6 and 12 months	14	7	21
	1.8	1.6	3.4
	66.67	33.33	100
	40	17.5	28
above 12 months	17	3	20
	6.3	5.5	11.8
	85	15	100
	48.57	7.5	26.67
Total	35	40	75
	17	14.9	31.8
	46.67	53.33	100
	100	100	100

Pearson $chi^2(2) = 31.8238$ Pr = 0.000

The P Value of the result is .000 which is less than the minimum P value=0.05 thus the relationship between the status of the project and delayed Project implementation period has strong relationship. The output of the vertical analysis shows that those projects which was implemented its operation based on the expected period of time has been lately implemented up to 6 month, between six month up to 12 month and greater than 12 month take 11%, 40% and 49% for defaulter and for the successful projects 75%,17.5% and 7.5% respectively. This implies that that for projects which implemented operation up to six months the projects are more successful than between six month and 12 months and above. In the contrary the probability of the project default increases when the project implemented period is more than six months. This authenticate that the financed projects are started its operation based on the appraisal document the probability of loan repayment performance have increased compared to lately implemented projects.

4.3.4. 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 37% of the project have no input raw materials whereas about 63% of them have input raw material.

Table 17 Relationship with Raw Material Availability

raw-material availability	Status		Total
	Defaulter	Successful	
Not available	14	14	28
	0.1	0.1	0.1
	50	50	100
	40	35	37.33
Available	21	26	47
	0	0	0.1
	44.68	55.32	100
	60	65	62.67
Total	35	40	75
	0.1	0.1	0.2
	46.67	53.33	100
	100	100	100

Pearson $chi^2(1) = 0.1995$ Pr = 0.655

The P Value of the result is 0.655 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 50% and 50% respectively for the project no input raw material. Alternatively, about 55 % of successful projects and 45 % of defaulters' project were available input raw material.

4.3.5. Output Product Market Accessibility

Table 18 shows the relationship between the status of the project and accessibility of output product market. The result revealed that from the observed population 29% of the project

did not have output product market accesses whereas about 71% of them had accessibility of output product market.

Table 18 Relationship with Output Product Market Accessibility

	Status		
Accessible	Defaulter	Successful	Total
Not market accessible	16	6	22
	3.2	2.8	6
	72.73	27.27	100
	45.71	15	29.33
Market accessible	19	34	53
	1.3	1.2	2.5
	35.85	64.15	100
	54.29	85	70.67
Total	35	40	75
	4.5	4	8.5
	46.67	53.33	100
	100	100	100

Pearson $chi^2(1) = 8.4952$ Pr = 0.004

The P Value of the result is 0.004 which is greater than the minimum standard for P value=0.05. Thus it has strong relationship between the status of the project and accessibility of product. In addition to that percentage of successful and defaulter borrowers are 27% and 73% respectively for the project had no market access. The output of the vertical analysis shows that from the observed population successful and defaulter projects in which it had/not market accesses take share of 54% and 46%, 53% and 47% respectively.

4.3.6. Type of Management

Table 19 shows the relationship between the status of the project and type of management. the horizontal analysis shows that about 57 percent of successful project and 43 percent of defaulters' projects were managed by employed managers where as about 48 percent of

non defaulters and 52 percent of defaulters were managed by owners manger.

Table 19 Relationship with Type of Management

Type of Management	Status		Total
	Defaulter	Successful	
Employed	20	26	46
	0.1	0.1	0.2
	43.48	56.52	100
	57.14	65	61.33
Owned	15	14	29
	0.2	0.1	0.3
	51.72	48.28	100
	42.86	35	38.67
Total	35	40	75
	0.3	0.2	0.5
	46.67	53.33	100
	100	100	100

Pearson $chi^2(1) = 0.4859$ Pr = 0.486

The P Value of the result is 0.486 which is greater than the minimum standard for P value=0.05. Thus relationship between the status of the project and type of project management do not have strong relationship. The vertical analysis of the result shows that about 43 and 57 percent of defaulters' projects were managed by employed managers and owner's manager respectively. Similarly about 65 and 35 percent of successful projects were managed by employed managers and owners manager respectively.

4.3.7. Type of Market for the Commodity Financed

Table 20 shows the relationship between the status of the project and type of market for the commodity financed. The horizontal analysis shows that about 51 percent of successful project and 49 percent of defaulters' projects were sold at local market where as about 56 percent of successful projects and 44 percent of defaulters, the output product of the projects were sold at export market.

Table 20 Relationship with Type of Market for the Commodity Financed

Market	Status		Total
	Defaulter	Successful	
Local market	19	20	39
	0	0	0.1
	48.72	51.28	100
	54.29	50	52
Export market	16	20	36
	0	0	0.1
	44.44	55.56	100
	45.71	50	48
Total	35	40	75
	0.1	0.1	0.1
	46.67	53.33	100
	100	100	100

Pearson $chi^2(1) = 0.1374$ Pr = 0.711

The P Value of the result is 0.711 which is greater than the minimum standard for P value=0.05 thus have no relationship between the status of the project and type of market for the commodity financed. The vertical analysis of the result shows that about 54 and 46 percent of defaulters' projects were sold its output product at local and export market respectively. Similarly about 50% of successful projects were sold the product at local and export market. This implies that the product market is export purpose the probability of more projects successful than project sold at local market.

4.3.8. Loan Processing Time

Table 21 indicates the relationship between the status of the project and loan processing time. It is found that about 69,58,33,0,0 and 0 percent of successful project and 31, 42, 67,100,100 and 100 percent of defaulters' projects have taken loan processing time ≤100days, between 101 up to 150 days, 151 up to 2000 days, 201 up to 250 days, 251 up to

300 days and 301 up to 350 days respectively.

Table 21 Relationship with Loan Processing Time

Loan processing time	Status		Total
	Defaulter	Successful	
less or equal to 100day	10	22	32
	1.6	1.4	3.1
	31.25	68.75	100
	28.57	55	42.67
101-150 days	10	14	24
	0.1	0.1	0.2
	41.67	58.33	100
	28.57	35	32
151-200 days	8	4	12
	1	0.9	1.9
	66.67	33.33	100
	22.86	10	16
201-250 days	3	0	3
	1.8	1.6	3.4
	100	0	100
	8.57	0	4
251-300 days	3	0	3
	1.8	1.6	3.4
	100	0	100
	8.57	0	4
301-350 days	1	0	1
	0.6	0.5	1.1
	100	0	100
	2.86	0	1.33
Total	35	40	75
	7.1	6.2	13.2
	46.67	53.33	100
	100	100	100

Pearson $chi^2(5) = 13.2254$ Pr = 0.021

The P Value of the result is 0.021 which is less than the minimum P value= 0.05 thus have relationship between the status of the project and loan processing time. The vertical analysis shows that 29,29,23,8,8, and 3 percent of successful project and 55,35,10,0,0 and 0 percent of defaulters' projects were it takes loan processing time ≤100 days, between 101 up to 150 days, 151 up to 2000 days, 201 up to 250 days, 251 up to 300 days and 301 up to 350 days respectively. This implies that the number of days taken from loan application to

first disbursement increases the probability of default rate also increases and vis-à-vis.

4.3.9. Number of Project Follow-Up

Table 22 shows the relationship between the status of the project and number of project Follow-up. It is found that about 0, 18, 39 and 91 percent of successful project and 100,72,61 and 9 percent of defaulters' projects have been conducted project follow-up ≤0.5 times, 0.51 to1 times,1.1 to 1.5 times and 1.51 to 2 times per annum respectively.

Table 22 Relationship with Number of Project Follow-Up

Follow-up	Status		Total
	Defaulter	Successful	
less/equal to 0.5 times	3	0	3
	1.8	1.6	3.4
	100	0	100
	8.57	0	4
0.51 - 1.0 times	18	4	22
	5.8	5.1	10.9
	81.82	18.18	100
	51.43	10	29.33
1.1 - 1.5 times	11	7	18
	0.8	0.7	1.5
	61.11	38.89	100
	31.43	17.5	24
1.51 - 2 times	3	29	32
	9.5	8.3	17.9
	9.38	90.63	100
	8.57	72.5	42.67
Total	35	40	75
	18	15.7	33.7
	46.67	53.33	100
	100	100	100

Pearson $chi^2(3) = 33.7396$ Pr = 0.000

The P Value of the result is 0.000 which is less than the minimum P value=0.05 thus have strong relationship between the status of the project and loan processing time. Likewise the result shows that 0,10,17, and 73 percent of successful project and 9,51,31 and 9 percent of defaulters' projects were project follow-up undertaken ≤0.5 times, .51 to1 times,1.1 to 1.5 times and 1.51 to 2 times per annum respectively. This implies that the number of follow-up increases the probability of loan repayment performance also increases.

4.3.10. Equity-to-Debt Ratio

Table 23 shows the relationship between the status of the project and Equity to debt ratio. The study result shows that about 0, 44, 65 and 0 percent of successful project and 100, 56, 35 and 100 percent of defaulters' projects were equity to debt ratio ≤0.25, 0.26 to 0.5, 0.51 to 0.75 and above 0.75 respectively.

Table 23 Relationship with Equity-to-Debt Ratio

Equity to debt ratio	Status		Total
	Defaulter	Successful	
Less/equal to 0.25	1	0	1
	0.6	0.5	1.1
	100	0	100
	2.86	0	1.33
0.26 - 0.50	20	16	36
	0.6	0.5	1.1
	55.56	44.44	100
	57.14	40	48
0.51 - 0.75	13	24	37
	1.1	0.9	2
	35.14	64.86	100
	37.14	60	49.33
Greater than .075	1	0	1
	0.6	0.5	1.1
	100	0	100
	2.86	0	1.33
Total	35	40	75
	2.9	2.5	5.4
	46.67	53.33	100
	100	100	100

Pearson chi^2 (3) = 5.4054 Pr = 0.144

The P Value of the result is 0.144 which is greater than the minimum P value=0.05 thus have no relationship between the status of the project and loan processing time. Likewise the result shows that 0, 40, 60, and 0 percent of successful project and 3, 57, 37 and 3 percent of defaulters' projects were equity to debt ratio ≤0.25, 0.26 to 0.5, 0.51 to 0.75 and above 0.75 respectively.

4.3.11. Distance from Project Location to Raw Material Availability

Table 24 shows the relationship between the status of the project and distance from project location to input raw material. It is found that about 49, 52, 60,100 and 5 percent of successful project and 51, 48, 40, 0 and 95 percent of defaulters' projects have distance

from project location to input raw material ≤100km, 101 km to 500 km, 501km to 3500km, 3501 km to 6000km and above 6000km respectively.

Table 24 Relationship with Distance from Project Location to Raw Material Availability

Distance raw material	Status		Total
	Defaulter	Successful	
Less/equal to 100 km	19	18	37
	0.2	0.2	0.3
	51.35	48.65	100
	54.29	45	49.33
101 - 500 km	12	13	25
	0	0	0
	48	52	100
	34.29	32.5	33.33
501 - 1500 km	4	6	10
	0.1	0.1	0.2
	40	60	100
	11.43	15	13.33
3501 - 6000 km	0	1	1
	0.5	0.4	0.9
	0	100	100
	0	2.5	1.33
Greater than 6000 km	0	2	2
	0.9	0.8	1.8
	0	100	100
	0	5	2.67
Total	35	40	75
	1.7	1.5	3.1
	46.67	53.33	100
	100	100	100

Pearson $chi^2(4) = 3.1477$ Pr = 0.533

The P Value of the result is 0.533 which is greater than the minimum P value=0.05 thus have no relationship between the status of the project and loan processing time. The study result shows that 45, 33,15,2, and 5 percent of successful project and 54, 35, 11,0 and 0 percent of defaulters' projects have distance from project location to raw material availability are ≤100km, 101 km to 500 km, 501km to 3500km, 3501 km to 6000km and above 6000km respectively.

4.3.12. Distance from Project Location to Output Product Market

Table 25 shows the relationship between the status of the project and distance from project location to output product market. The study result shows that about 47, 75, 63 and 52 percent of successful project and 53, 25, 37 and 48 percent of defaulters' projects were distance from project location to input raw material ≤ 500km, 501km to 5000 km, 5001km to 10,000km, and above 10,000km respectively.

Table 25 Relationship with Distance from Project Location to Market

Distance from market	Status		Total
	Defaulter	Successful	
less/equal to 500 km	18	16	34
	0.3	0.3	0.5
	52.94	47.06	100
	51.43	40	45.33
501 - 5000 km	2	6	8
	0.8	0.7	1.5
	25	75	100
	5.71	15	10.67
5001 - 10000 km	3	5	8
	0.1	0.1	0.3
	37.5	62.5	100
	8.57	12.5	10.67
Greater than 10000 km	12	13	25
	0	0	0
	48	52	100
	34.29	32.5	33.33
Total	35	40	75
	1.2	1.1	2.3
	46.67	53.33	100
	100	100	100

Pearson $chi^2(3) = 2.3347$ Pr = 0.506

The P Value of the result is 0.506 which is greater than the minimum P value=0.05 thus no relationship between the status of the project and loan processing time. The study result shows that 40, 15, 12, and 33 percent of successful projects and 51, 6, 9 and 34 percent of defaulters' projects have distance from project location to market ≤500km, 501km to 5000 km, 5001km to 10,000km, and above 10,000km respectively.

4.4. Correlation analysis between independent variables

In this section the correlation between the loan repayment and explanatory variables is discussed. A correlation matrix used to ensure the correlation between the explanatory variables. Cooper and Schindler (2009) suggested that a correlation coefficient above 0.8 between explanatory variables should be correlated because it is a sign of multicolinearity problem. Malhotra, (2007) argued that the correlation coefficient can be 0.75. The result of correlation analysis shows that of all the independent variables used in the empirical analysis, type of market and distance from project location to output product market area have high correlation coefficient. This indicted that the researcher can use one of the two variables. Hence the researcher has used market type for his analysis.

After the credit assessment and disbursement is done, the credit customer is expected to payback the installment as per agreed schedule. A correlation coefficient is a statistical measure of the degree to which changes to the value of one variable predict change to the value of another.

4.4.1. Educational level

Appendix 2 shows that the educational levels of the project manager were strong positive relationship with type of market for the commodity financed (TMFCF), Managerial experience of Project manager (MEPM), number of project follow-up (NPF), distance from project location to product market (DFPLPM), amount of loan (AML), equity to debt ratio (EDR) and distance from project location to raw material (DFPLRM). The degree of correlation between the educational levels of the project manager and the above list of independent variables had 26%,22%,17%,16%,13%,4% and 3% positive relationship in the descending order. When reviewed the negative relationship of the result shows that delayed Project implementation period (DPIP) and availability of raw material (ARM), accessibility of output product market (AM), loan processing time (LPT) and type of management (TMGT) had 30% 24%,4%,3% and 1% negative relationship in the descending order. These entails that the educational level of the project manager had BA/BSs or above, the delayed of Project implementation period (DPIP) decrease and even though sufficient enough raw materials had not been obtained from local market they would able to search a mechanism of acquiring the raw materials through analyzing the profitability of the project.

4.4.2. Managerial experience of Project manager

Appendix 2 shows that the managerial experiences of project managers were strong positive liner relationship with project follow-up (NPF), equity debt ratio (EDR) and amount of loan (AML). The relationship between the managerial experiences of project manager with the stated independent variable has 25%, 17% and 17% positive liner relationship. When reviewed the negative relationship of the result shows that Delayed Project implementation period (DPIP) and type of market for the commodity financed (TMFCF) has 33% and 11.5% negative relationship. These entail that increase managerial level of project manager decrease delayed of Project implementation period (DPIP) and easily acquired the input raw material either local or through overseas.

4.4.3. Loan processing time

Appendix 2 indicates that the loan processing time of project had strong positive liner relationship delayed project implementation period (DPIP). The relationship between the loan processing times of the project with the stated independent variable had 40% positive relationship. On the other hand the negative relationship of the result shows that number of project follow-up (NPF) and distance from project location to raw material destination had 26% and 17% negative relationship. This shows that increase loan processing time of the project decreased the number of project follow-up (NPF) and distance from project location to raw material destination.

4.4.4. Amount of loan

Appendix 2 point towards that the amount of loan had strong positive liner relationship with number of project follow-up (NPF), distance from project location to output product market, distance from project location to raw material destination and type of market for the commodity financed (TMFCF). The relationship between the amounts of loan with the stated independent variable had 20, 18, 16 and 13 percent positive liner relationship. When comes to the negative relationship, equity debt ratio, type of management and Delayed Project implementation period (DPIP) had 36%, 23% and 16% negative relationship. The result shows that increase in amount of loan and decreased equity debt ratio and Delayed Project implementation period (DPIP) and the type of management will become employed.

4.4.5. Number of Project Follow-up

Appendix 2 specifies that the number of project follow-up (NPF) had strong positive linear relationship with amounts of loan (AML), Equity debt ratio (EDR) and distance from project location to raw material destination. The relationship between the numbers of project follow-up with the stated independent variable had 42, 23 and 20 percent positive liner relationship. When comes to the negative relationship, Delayed Project implementation period (DPIP) had 47% negative relationship. The result shows that increase in the number of project follow-up per annum decrease delayed project implementation period (DPIP).

4.4.6. Equity-to-debt ratio

Appendix 2 revealed that the equity to debt ratio (EDR) had strong positive liner relationship with type of management (TMGT). The relationship between the equity to debt ratio with the stated independent variable had 28 percent positive liner relationship. When it comes to the negative relationship, Delayed Project implementation period (DPIP) and distance from project location to output product market had 22% and 16% negative relationship. The result shows that increase in the equity to debt ratio in turn decreases delayed Project implementation period (DPIP) and distance from project location to output product market (DFPLPM).

4.4.7. Delayed Project implementation period

Appendix 2 indicates that the Delayed Project implementation period (DPIP) had strong negative liner relationship with amount of loan (AML) and distance from project location to input raw material (DFPLRM). The relationship between the Delayed Project implementation period (DPIP) with the stated independent variable has 35 and 18 percent positive liner relationship. The result shows that increase in delayed project implementation period (DPIP) in turn increases amount of loan (AML) and distance from project location to input raw material (DFPLRM).

4.5. Determinants of loan repayment in project financing

As discussed in chapter 3, the probit econometric model was selected for analyzing the determinant 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, two variables which are the type of market and distance from project location to output product market had colliearity. Finally, the researcher has used one of the two variables, for his empirical analysis, type of market is used.

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 26.

Table 26 Probit regression

Number of obs	=	75
LR chi2(12)	=	80.99
Prob > chi2	=	0.0000
Pseudo R2	=	0.7815

Log likelihood= -11.503721

status	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
experience	0.158459800	0.08031380	1.97	0.048***	0.0010476	0.315872
Processing time	-0.024750900	0.01106400	-2.24	0.025**	-0.046436	-0.003066
Loan amount	-0.000000022	0.00000004	-0.57	0.571	-0.0000001	0.0000001
Follow up	3.822283000	1.59881700	2.39	0.017**	0.6886596	6.955906
Equity debt	7.259040000	4.29517100	1.69	0.091***	-1.15934	15.67742
Distance raw	-0.000272000	0.00051350	-0.53	0.596	-0.001278	0.000734
Education	1.467816000	0.82061590	1.79	0.074***	-0.140562	3.076193
Implemented	-1.034358000	0.59816190	-1.73	0.084***	-2.206734	0.138018
Raw material	0.491691300	0.80295180	0.61	0.54	-1.082065	2.065448
Accessible	0.346817300	0.94427280	0.37	0.713	-1.503923	2.197558
Management	-2.894686000	1.29921100	-2.23	0.026**	-5.441093	-0.348278
Market	0.337999000	0.79107030	0.43	0.669	-1.21247	1.888468
_cons	-4.728153000	2.81610400	-1.68	0.093	-10.24762	0.791311

, and * are at 5% and 10% level of significance respectively

From the results in Table 26 above, a likelihood ratio (LR) statistic of 80.99 with a chi squared ($\chi 2$) distribution at twelve 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=0.000 means that the model is significant and Pseudo R2 is 0.7815 means that the explanatory variables explain the dependent variable about 78%.

4.5.1. Discussion of the Significant Explanatory Variables

Out of the twelve variables hypothesized the determinant of loan repayment performance of the project financing, seven of them were found to be statistically significant. The maximum likelihood estimates of the probit regression model shows that managerial experience of project manager ,loan Processing time ,education level, number of project supervisions/ follow-ups by the Bank, equity-debt ratio, Project implementation period (PIP) and type of management for the financed projects borrowers were significant factors determining the loan repayment performance of DBE's financed project. Specifically, the coefficients of loan processing time, number of project follow ups/supervisions by the Bank and type of management for the financed project were statistically significant at 5% predictive probability level. The variable managerial experience of project manager experience, education level, Equity to debt ratio and Project implementation period (PIP) of the financed project were statistically significant at 10% predictive probability level. On the other hand, the coefficients of six independent variables, namely amount of loan, availability of input raw material, accessibility of output product market, type of market for the commodity financed, distance from project location to input raw material and output product market used were less influential in explaining loan repayment performance of DBE's financed projects.

The model estimate confirms that the loan processing time taking to process a loan has a significant and negative impact on loan repayment performance of project financed by DBE. Other things being constant, the predictive probability of being successful/non defaulter increases by a factor of 0.025 as loan processing time decrease by one day. This might be due to the fact that, as the time of loan processing increases beyond the

planned/scheduled time in the project, it could bring interruption of all activities planned in the project like production period, marketing and harvesting of the project product all these having negative impact on the smooth operation of the project. As a result, borrowers who have got the loan in longer delayed failed the repayment of loan according to the contractual agreement. This result is conformity with the empirical finding of Jama and Kulundu(1992), Hunte (1996), Njioku and Odii (1991), Mulugeta (2010) and Bekele(2003).

The result of the probit model shows that education level of project manager has significant 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 147%. 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 Wongnaa and Awunyo (2013),Mulugeta(2010),Eze and Ibekwe (2007) and Abrham (2002).

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 5% predictive probability level. Increasing the number of supervisory visits on the financed projects, the predictive probability borrower been able to repay the loan increased by 382%. 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 or no visiting at all. 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 Adewale Alawiye-Adams (1994), Koopahi and Bakhshi (2002), Mulugeta (2010), Wongnaa and Awunyo (2013), Jama and Kulundu(1992) and Okovie (1996) have also reported the significant effect of this variable on loan repayment.

The equity to debt ratio is an important factor, which is positively related to borrowers' ability to repay their loans and is significant at 10% 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 725%. 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 expressions, the financed project borrowers will take more responsibility and it brings less predictive probability of diversions of the on project and precaution activities has been undertaken at each operation of the project. This is due to the borrower has to have some "skin" in this business "game" to insure his or her best efforts toward success and timely repayment of the borrowed funds. It is supported by theory of william (2007), 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 DBE's financed project borrowers. It is significant at 10% 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. Increasing the decrease of project implementation period by a unit digit will decrease the predictive probability of the financed project borrower able to repay the loan by 103% it is supported by (Particip Gmbh, 2002).

The type of project manager is one of the factors which significantly and negatively determine the loan repayment performance of project financed borrower of DBE at 5% predictive probability level. The econometric model results revealed that, other things

being constant, if the type of project manager is employed manager, the predictive probability of being successful projects increase by a factor of 2.89 as the project manager is employed manager. This might be the project manger are managed by qualified employ, could make correction action timely when faced different problems and find various mechanism to obtaine better market through assessing international market. This makes the project to be sustainable. This in turn has a negative impact on the dependent variable. Hence, type of management is expected to negative sign. This implies that a borrower will likely have greater loan repayment ability when the project manager is employed manager than owner manager. Therefore, reject the null hypotheses.

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 15.85%. 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 to proper utilization the financed project and inputs 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 Oladeebo (2008), Wongnaa and Awunyo (2013) and Mulugeta (2010),Muluken (2014).

4.5.2. Discussion of the Insignificant Explanatory Variables

The model confirms that the amount of loan has a insignificant and negative impact on loan repayment performance of project financed by DBE. Other things being constant, the predictive probability of being successful/non defaulter increases by a factor of $2.2*10^{-8}$ as amount of loan decrease by one Birr.

The distance from raw material is one of the factors which has insignificantly and negatively determine the loan repayment performance of project financed borrower of DBE. The econometric model results revealed that, other things being constant, if the

distance from raw material is near to the project location, the predictive probability of being successful projects increase by a factor of $2.7*10^{-4}$.

Availability of raw material is another insignificant variable and positively determines the loan repayment performance of project financed borrower of DBE. The econometric model results shows that, other things being constant, if availability of raw material have been in the project location, the predictive probability of being successful projects increase by a factor of 49%.

Accessibility of market is the other insignificant variable and positively determines the loan repayment performance of project financed borrower of DBE. The econometric model result shows that, other things being constant, if market accessible for the financed project, the predictive probability of being successful projects increase by a factor of 35%.

The type of market for commodity financed is one of the insignificant variables and positively determines the loan repayment performance of project financed borrower of DBE. Other things being constant, the predictive probability of being successful/non defaulter increases by a factor of 0.34 as the market is becoming export oriented.

4.6. Post Estimation

4.6.1. 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 existed as follows:

Table 27 Marginal covariates with respect to dependent variable (Loan Status)

Status	dy/dx	Delta-method Std. Err.	Z	P>z	[95% Conf. Interval]	
experience	0.01296	0.0056583	2.2900	0.0220**	0.00187	0.02405
Processing time	-0.00202	0.0007287	-2.7800	0.0050***	-0.00345	-0.00060
Loan amount	0.00000	3.15E-09	-0.5800	0.5640	0.00000	0.00000
Follow up	0.31260	0.1043849	2.9900	0.0030***	0.10801	0.51719
Equity debt	0.59367	0.3016016	1.9700	0.0490**	0.00255	1.18480
Distance raw	-0.00002	0.0000415	-0.5400	0.5910	-0.00010	0.00006
educational	0.12004	0.0593865	2.0200	0.0430**	0.00365	0.23644
implemented	-0.08459	0.0436023	-1.9400	0.0520*	-0.17005	0.00086
Raw material	0.04021	0.0645477	0.6200	0.5330	-0.08630	0.16672
accessible	0.02836	0.0765372	0.3700	0.7110	-0.12165	0.17837
management	-0.23674	0.0839646	-2.8200	0.0050***	-0.40131	-0.07217
Market	0.02764	0.0638016	0.4300	0.6650	-0.09741	0.15269

*, ** & *** are at 10, 5% and 1% level of significance respectively.

As can be seen from Table 27 shows that the marginal affect of equity to debt ratio of the financed project is 59% which is the highest positive statistical significant variable compared to other significant explanatory variables. Other things remaining constant when the equity to debt ratio increase by a unit digit, the probability of being successful financed project increases by 59%. Subsequent to equity to debt ratio of project financing d 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 31% 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 31% increase loan repayment performance, if other things are remaining constants. Educational level of project manager and experience takes the third and fourth significant determinant of loan repayment performance of the project financed borrowers has a positive marginal effect of 12% and 1.3% respectively. From the last two positive statistical significant variables, the former variables which is educational level being BA/BSc or above will have a probability of project being successful/non-defaulter is increased by 12%, while the latter variable which is project management experience increases by 1 year, the probability of being successful increases by 1.3% in which other things are remaining constant.

On the other hand, from the negative statistically significant variables type, project manager has highest marginal effect which is 24%. This implies that being the type of manger is employed the probability of loan repayment performance increases by 24% in which other things being constant. Following to the type of project manager, project implementation has 8.5% statistically significant and negative effect on repayment performance of borrowers. Decreasing the project implementation period by six months, the probability of being project successful increases by 8.5% other things being constant for financed project borrowers' as shown from the marginal effect Table 27. From the negative statistical significant variables the lowest statistical significant variable is loan processing time which has a marginal effect of about 0.2%. This indicates that decreasing loan processing time by one day the probability of being successful increases by 0.2%.

4.6.2. Model Selection criteria after probit regression

As shown in the following Table 28, 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. From Table 28, the researcher fear to reject the null hypothesis and hence, the model is well specified to analyze the determinant of successful loan repayment performance of the financed projects by DBE.

Table 28 Goodness of fit for model selection

Probit model for status, goodness-of-fit test		
H_O: the model is good model vs H_a: not H_o		
Number of observations =	75	
Number of covariate patterns	=	75
Pearson $chi^2(62)$	=	22.61
Prob > chi^2	=	1.0000

4.6.3. Sensitivity and Specificity Analysis

As shown in Table 29, the overall rate of correct classification is estimated to be 92%, with 91.43% of the non defaulter in loan repayment group correctly classier (specificity) and 92.5% 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. This phenomenon is evident here. See the graphical representation for sensitivity and specificity on Appendix 3.

Table 29 Sensitivity and Specification

Sensitivity	Pr(+| Successful(D))	92.50%
Specificity	Pr(-|Defaulter(~D))	91.43%
Positive predictive value	Pr(Successful(D) |+)	92.50%
Negative predictive value	Pr(Defaulter (~D)| -)	91.43%
Correctly classified		92.00%

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the major findings of the study are summarized, conclusions are drawn based on the finding, and recommendations are forwarded for Development Bank of Ethiopia, the regulatory body and policy decision makers at macro-economic level.

5. Summary

Development Bank of Ethiopia was established for the sole purpose of providing project financing to strategic projects as well as technical services and advice for those projects established by DBE. Provision of credit only could not support the economic development of the country unless an effective monitoring and evaluation system is put in place to ensure efficient and effective utilization of the fund/credit for the intended purpose. More importantly, the Bank must ensure in advance that the loan will be repaid timely in accordance with the terms and conditions stipulated in the contractual agreement.

The main objective of this study is to investigate determinants of successful loan repayment in project financing in the context of Development Bank of Ethiopia. Specifically, the paper is intended to evaluate the effect of institutional, demographic and socio economic factors of the project manager/owner. In this study only secondary data sources were used to analyze the determinants of successful loan repayment performance in financed project. To this end, a probit model was adopted to determine as to whether the several explanatory variables, as hypothesized in the paper, have much to do with the loan repayment performance of DBE-financed and assisted projects.

Data and information for the study were collected from 75 files of individual borrowers at head office of the Bank, which currently manages the lion's share (cover 85%). The study shows that 40 (53%) of the financed project were successful projects (non-defaulters), whereas the rest 35 (47%) were non-successful ones (defaulters).

The analysis of the study shows that out of the twelve independent/explanatory variables, which were hypothesized to determine the loan repayment performance of projects financed by DBE, seven were statistically significant in explaining the variation in debt service. These variables include managerial experience of project manager, loan processing time, educational level, and number of supervisions / follow-ups conducted by the bank, equity- to- debt ratio, project implementation period and type of management. In contrast, the remaining six were less powerful. The probit model result reveals that there is no opposing sign from priori hypothesized among the significant explanatory variable.

While comparing and contrasting the effects of the significant explanatory variables incorporated in the study, the managerial experiences of projects are found to be the most significant positive determinant of successful loan repayment performance of DBE's project finance 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, and implement a back-up plan or plan 'B' if something wrong happens. In a nutshell, project management experience has a positive impact on the sustainability and profitability of a project, as well as on debt service performance.

Loan repayment performance is negatively and statistically significant related to delay loan processing time. The possible explanation is that as the time of loan processing time exceeds the planned time, the project may mismatch of harvesting period, market problems for seasonal products, price escalation problem and disturbance of production schedule. This in turn has a negative impact on both sustainability/profitability of the project and repayment performance of borrowers.

Educational level of borrowers was the other significant variable, which determines the successful loan repayment performance of project financing borrowers. As estimated, the variable was positively related to repayment performance and statistically significant at 10% probability level. This result shows that project financed borrowers who have better educational level are more likely to be successful.

Another variable is number of project follow-up/supervision which has a statistically significant and positive influence on the successful loan repayment performance of DBE's financed project borrowers. This is because project borrowers who have had regular contacts/relationships with the Bank's professionals are better informed than who have not had frequent contacts. As a result, the well-informed entrepreneurs could implement effective marketing and production strategies. On top of that, they have 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.

Debt-to-equity ratio is also a statistically significant factor in enhancing loan repayment performance of DBE financed projects. 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-upon 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 DBE's financed project borrowers. It is statistically significant at 10% 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 immediately after the gestation period of projects has elapsed.

Lastly but not least type of project management is one of the factor, which is statistically significant and negatively determines the loan repayment performance of project finance of DBE at 5% probability level, if the project manager is owner manager. This might be that the project manger are managed by qualified employed, could make correction action timely when faced different problems and find various mechanism to obtained better

market through assessing international market. This makes the project to be sustainable. This in turn has a negative impact on the dependent variable. Hence, type of management is expected to negative sign. This implies that a borrower will likely have greater loan repayment ability when the project manager is employed manager than owner manager.

5.2. Conclusion

Based on the findings it can be concluded that managerial experience of project manager, loan Processing time, education level, number of supervisions/ follow-ups by the Bank, equity to debt ratio, delayed Project implementation period and type of management 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. The managerial experience of project manager, education level, numbers of supervisions/ follow-ups by the Bank, equity to debt ratio significant variables have positive relationship with loan repayment performance of the Bank. While loan processing time, delayed project implementation period and same owner and project manger have negative relationship with loan repayment performance of the Bank.

5.3. Recommendation and Policy implication

This study has a potential to support the policy makers of Development Bank of Ethiopia to take corrective measures on the most important determinants of successful loan repayment performance of credit-assisted projects. The possible policy implications, emerged from the study, are forwarded below.

One of the vital policy implications has much to do with the 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. In this regard, the Bank should include specifically five years of experience or above for a project manager, regardless of whether he/she is employed or self-employed, in its credit policy as a basic requirement for loan provision.

Another important policy implication is related to the strong association/relationship prevailing between education and successful loan repayment performance of project finance. This relationship sheds light on the importance of incorporating, as well as giving high emphasis on, the requirement of educational level of project managers or borrowers, in the Bank's credit policy before any loan is released. Hence, it 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.

Delay in loan processing time is the other variable, which is negatively correlated with the loan repayment performance of project finance. This implies that the Bank should improve its loan processing and project management system by putting in place an effective monitoring and evaluations system. To this end, the deadlines set for achieving various milestones should be critically evaluated in a win-win approach, and the important lessons learned in the process should be immediately implemented to improve subsequent performances on an ongoing basis.

Conducting frequent project follow-up/supervision visits has also a direct bearing on successful 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 manger/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.

The other variable is debt-to-equity ratio, which directly and positively affects the loan repayment performance of project finance. 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, say 50:50 or more, and thus this requirement should be given high emphasis before any

loan is released.

Expediting project implementation period has a positive impact on the loan repayment performance of financed projects. 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 possible to reduce or eliminate unnecessary cost overruns in project management.

Last but not least, the owner manager is one of the factors which statistical significant and negatively determine the loan repayment performance of project finance of DBE at 5% probability level. This might be the project is managed by qualified employed, could make correction action timely when faced different problems and find various mechanism to obtained better market through assessing international market. This implies that a borrower will likely have greater loan repayment ability when the project manager is employed than owner, if the project managers have educational qualification and related work experience. Therefore; the banks properly decide the type of project manager, through assessing of the qualification, capacity and skills of the project manager in its managerial aspect of the project appraisal.

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APPENDIX A

Format prepared for data collection

This format is prepared to collect data's from the files of the individual borrowers at DBE to undertake the research titled 'Determinants Factors of Successful Loan Repayment Performance in Project Financing: The case of DBE'.

I. Background information of the borrowers' or project manger

1. Name of the project: _____
2. Project Sector_____
3. Type of project_____
4. Educational level of borrower/Manager:

   1 BA/BSC and above _____0 for diploma and below_____
5. Managerial Experience of Project Manager/owner_____ years

II. Loan history

6. Loan processing time (i.e. number of days taken from loan application to first disbursement of the loan):_____
7. Total amount of Loan disbursed: Br. _____
8. Equity to debt ratio: _____%.
9. Delayed Project implementation period (DPIP)

1 for project lately implemented up to six month_____

2 for project implemented lately for more than six month but less than a year_____

3 for project implemented lately for more than a year_____

III. Other information

10. Number of project follow-ups/inspections per annum under taken by the Bank after the loan disbursed:_____

11. Status of borrower repayment:

1. Successful/non-defaulter (fully settled its loan based on the contractual agreement) _____

0. Defaulter/Not successful (Delayed its loan repayment period) _____

12. Management type: 1. Owned _____0. Employed_____

13. Distance from project location to raw Material Input_____ KM

14. Distance from project location to output product market _____ KM

15. Type of market for the commodity financed

1 for output product market is export _____

0 for output product market is local _____

APPENDIX B

Correlation Coefficients

Of all the independent variables used in the empirical analysis, type of market and distance of the project from market area have high correlation coefficient. This indicted that the researcher can use one of the two variables. The researcher uses market type for his analysis

	EL	MEPM	LPT	AML	NPF	EDR	PIP	ARM	AM	TM	DFPLRM	DFPLPM	EL
EL	1												
MEPM	0.2198	1											
LPT	-0.0337	-0.0432	1										
AML	0.1273	-0.0034	-0.0225	1									
NPF	0.1695	0.246	-0.2619	0.2054	1								
EDR	0.0439	0.1734	-0.0034	-0.3587	0.2264	1							
PIP	-0.2972	-0.3269	0.406	-0.1593	-0.4725	-0.2172	1						
ARM	-0.2399	0.0681	-0.0111	-0.0327	0.1263	-0.1703	0.0258	1					
AM	-0.0401	0.1685	-0.166	0.0972	0.4208	-0.1591	-0.3576	-0.0129	1				
TM	-0.0132	0.0006	-0.1526	-0.2308	-0.0061	0.2811	-0.0856	0.1034	-0.0898	1			
DFPLRM	0.0314	0.1072	-0.1656	0.1365	0.2067	0.1527	-0.1853	-0.2802	0.1359	-0.0254	1		
DFPLPM	0.164	0.0156	-0.036	0.1894	-0.1126	-0.201	-0.0387	0.0176	-0.1942	0.0649	-0.1728	1	
TMFCF	0.2602	-0.1147	-0.0428	0.1603	0.0394	-0.1214	-0.0735	0.0243	-0.2016	0.0592	-0.2137	0.8383*	1

APPENDIX C

Figure 1 Sensitivity and Specificity