ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DETERMINANTS OF NON-PERFORMING LOANS: THE CASE OF DEVELOPMENT BANK OF ETHIOPIA

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA)

By:

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FEBRUARY, 2018

ADDIS ABABA, ETHIOPIA

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Degefe Durresa(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.

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LETTER OF CERTIFICATION

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

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ACKNOWLEDGEMENTS

First and for most I would like to thank almighty God, the Compassionate, the Most Merciful and Source of Knowledge & Wisdom, who bestowed upon me the health, the power and courage to accomplish this thesis.

Next, I would like to express my sincere gratitude to my advisor Degefe Durresa (PhD) for his continuous support of my MBA thesis, for his patience, kindness, encouragement, motivation, eagerness, and immense knowledge.

Last but not the least; I would like to thank my beloved wife Rahel Wubshet and my best friend Endeshaw Bayew for their support and encouragement throughout my education life.

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ABBREVIATIONS & ACRONYMS

ADFIAP	Association of Development Financing Institutions in Asia and the Pacific
CEC	Credit Evaluation Criteria
CNA	Commodity Nature Attributes
DBE	Development Bank of Ethiopia
DFIs	Development Financing Institutions
NPL	Non-Performing Loan
NPLs	Non-Performing Loans
PFA	Project Follow up Attributes
PIP	Project Implementation period
PLA	Policy Induced Attributes
SEE	Source of Equity Contribution
UNIDO	United Nation Industrial Development Organization

ABSTRACT

The study identifies the determinants of Non-Performing Loans in project financing in the case of Development Bank of Ethiopia from credit officer's viewpoint. In order to fulfill the stated objective an explanatory research design with quantitative and qualitative data approach were used. In order to obtain more insight on cases, open ended questionnaire was taken. Five variables used in the study, namely project follow up attributes, policy induced attributes, source of equity contribution, credit evaluation criteria of the bank during project appraisal and nature of the commodity factors assessed. In the study, probit regression model was used to examine variables which determine NPL. The study found that project follow up attributes, policy induced attributes and credit evaluation criteria during project appraisal had a significant and positive impact on the loan default in project financing which was consistent with the Researcher expectation. While source of equity contribution and nature of commodity attributes was found to had no significant contribution of loan default. The findings reveals that the Bank's project follow up is poor, which do not enable the Bank's top management make informed decision, plus the credit evaluation criteria such as DBE's credit project appraisal and evaluation parameters are not genuine for the realization of the project, the commodity research data do not reflect realistic facts, and the financial projections are exaggerated and unrealistic. Thus , the Bank has to put in place well-built follow up system that geared towards figuring out prevailing problems a project and bring an amicable solution that help the banks top management make an effective decision that brings the project to the right track, revise credit policy and procedure of the Bank in manner that put into consideration the realistic situation of national and international economic condition and reconsider its project evaluation criteria and update accordingly.

***Key words**: Non-Performing Loans, Development Bank of Ethiopia, Project Financing*

CHAPTER ONE

1.1 Introduction/Background

1.1.1. Background of the study

Development banking started during the time of industrial expansion in countries now considered to be more developed. More than a hundred years ago, the United States was already industrialized, and even earlier, Great Britain and a number of Central European countries developed their own industrial base. These industrial countries reached their level of industrialization through the long-term investment financing of banks that, at the time, performed the entrepreneurial function of taking on the risk of entering into new fields of production. Those institutions involved in long-term financing were known as industrial banks. One example of this type of financing was the construction of the railroads in the United States which goes even back to the 1700s (ADFIAP Secretariat Report, 2010).

The number of development banks has increased rapidly since the 1950s (post World War II), having been encouraged by the International Bank for Reconstruction and Development (usually called the World Bank) and its affiliates. Many national development finance institutions (DFIs), as development banks were also called, were established in many countries around the world during the period. Some of the large regional development banks include the Inter-American Development Bank, established in 1959; the Asian Development Bank, which began operations in 1966; and the African Development Bank, established in 1964 (UNIDO (1972).

Esty, C. (2004),While states the difference between Development Banks and commercial Banks: A development bank is created as an instrument of economic development while a commercial bank is created by business opportunities, A development bank is supposed to be pro-active as it should take an active role to promote projects and to develop institutions (entrepreneurs).

While commercial bank is known to be reactive to business opportunities. It requires bankability only after the entrepreneur's decision has been made; it waits for the idea to culminate into a funding requirement, For a development bank, there is an explicit effort to support economic development projects. The following desired 'impact' projects form the basis for scanning for opportunities: import substitution (at competitive prices); exports; increased local demand; regional development (for example, tourism, hotel and service). While Commercial banks goals are not the starting point for the identification of projects. Rather, they would most likely be side-benefits. A commercial bank has little concern for these objectives, except for the viability of the bank transaction. In short, a development bank's activities are project-based while that of the commercial bank are transaction-based. A development bank assumes project risks and does not insist on too much collateral. It will provide financing as long as the other criteria are met. A commercial bank pays high attention to collateral requirements. A development bank has a more difficult strategic objective because it is involved with the concerns of the country, specifically economic development. Aside from this, after providing financing, it is also concerned with developing the enterprise. Developing them explicitly would mean additional costs to the bank. Enterprise development dramatically limits the number of accounts that a development can handle because this is time-consuming. A commercial bank's main concern is to generate profits. Other benefits are only incidental. With a commercial bank's cost-consciousness, economic development would be its last priority. A development bank employs project appraisal as a means to determine the viability of the project submitted for financing. Project appraisal looks at the technical, financial, marketing, management, environmental and economic aspects of the project. Loan repayment is based on the cash flow to be generated by the project. A commercial bank uses risk asset management as tool to assess the borrower. It looks at the so-called 5 C's of credit, i.e., character, capacity, capital, collateral and condition. It bases loan repayment on the capacity of the borrower to pay (even from other sources) than from the 'project' itself. Thus, it can be said that development bank financing is project-focused while that of a commercial bank is borrower-oriented.

In Ethiopia, as in many developing countries, the growing demand of investment in commercial agriculture, manufacturing industry, mining and extractive industry and agro processing requires huge amount of funds to be invested. Report Indicate a growing demand of project loans at an increasing rate (DBE Annual report, 2016).

For such increasing demand of project loan, Development Bank of Ethiopia (DBE) as the second largest bank in terms of loan portfolio in the country should be able to finance such projects in order to be benefited from such opportunities and contribute to the country's growth and transformation plan. In line with the national development planning, DBE is trying its level best in financing various investment projects that contribute to the development goal of the country. Hence, Projects, as crucial building blocks of development have to be financed provided that they are technically feasible, financially viable, economically sound and environmental friendly.

According to DBE's lending procedure, Project finance is a medium or long term loans intended for financing of the acquisition and/or leasing of fixed business assets, for the establishment of a new project and expansion of the existing business.

Due to its nature, in most of the cases, project finance requires huge resource mobilization than other credit products. Accordingly the risk inherits and the payoffs are also great. Hence, DBE shall make its utmost effort to avoid or minimize the risk of project loan default or becoming non-performing loan (NPL) in as much as possible.

This paper tries to explore the basic factors influencing non performing loans/ loan default in general and particularly determinants in connection with the various bank policy induced variables, project follow up, commodity specific nature, and source of equity contribution and credit evaluation criteria.

1.1.2. Background of the organization

The Development Bank of Ethiopia (DBE) is the main strategic government bank starting from 1902 E.C specialized to spur the national development agenda through project financing. The Bank's focal point is the provision of customer focused lending to various projects in line with government priority areas by mobilizing fund from domestic and foreign sources while ensuring its organizational sustainability.

DBE's project financing and management process commences from the appraisal stage and continues up to evaluation stage, through, project cycle typically includes identification, formulation appraisal, implementation, monitoring and evaluation. Project identification and formulation, therefore are carried out by the promoters themselves before approaching the bank. The bank terminates its attachment when the project settles the debt.

At the appraisal stage, eligibility of the promoter for the bank finance, and technical feasibility, financial viability, institutional capacity, socio-economic benefits and environmental soundness of the project are evaluated. If the project is found to be sound through these evaluations, the bank approves a loan according to the financial requirement of the project. Under implementation stage the bank intervenes through frequent and serious inspection in order to ensure the utilization of the finance for the intended purpose and projects are being implemented according to the planned schedules.

After implementation, the bank continues monitoring and evaluation of projects through its follow up operation until the project fully repaid the loan. The main purpose of the follow up operations are to evaluate project performance with respect to project loan, to propose corrective measures whenever there is deviation from the plan, to enhance collection , and provide feedback for future appraisal process .

Table 1.1 project finance and NPL's trends of DBE('000,000)

Description	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**
Outstanding	14.88	18.90	22.52	27.36	31.63
Approval	2.78	8.15	7.42	9.69	11.84
Disbursement	1.30	5.34	5.47	6.84	6.33
Net Income	2.38	491.00	527.00	678.40	413.90
Assets	25.02	31.18	37.32	43.73	52.25
NPLs(%)	7.54	8.60	8.20	12.54	17.71

(Source –DBE annual report from June 30, 2011/2 to June 30, 2015/16)

As we see table 1.1 above, considering the last five years i.e. from 2011/12 to 2015/16, loan approved, loan disbursement, asset amount, loan outstanding balance and NPLs trends, we can say that the Bank's NPL is showing increasing trend in general.

Although DBE has been following these steps in its long journey of project finance using different organizational arrangements, it has been frequently exposed to liquidity problem, poor asset quality, and customer frustration as a result of project failure; moreover, as indicated in the above table the amount of NPLs percentage shows an increasing consequently, the net income growth rate of the bank is declining. This study ,therefore ,concentrates on the determinants of (NPL) from the credit experts view point within the project stages that are under the bank intervention and measures their significance in order to help the bank in developing a strategy and mitigation measures to reduce project failure.

1.2. Statement of the problem

One of the measures of the success of development banks depends on financing of successfully operating projects as per the appraisal study i.e. the established projects must generating and/or saving foreign currency, create employment opportunity, meet debt obligation and generate income for the government in the form of income tax.

Thus, effective control of loan repayment is critical for sustainable and healthy growth of the banking sector especially for those predominantly engaged in provisioning of long term and medium term investment loans. In other words, the determinant factors of establishing successfully operating projects have to be properly investigated because the survival and the sustainable operation of such lending institution are directly influenced by these factors. For banks, investigation of the major determinant factors for successful loan repayment of banks is essential, especially for medium term and long term investment financing Banks (Ayele, 2015).

Any loan granted by investment lending institution is generally provided at a cost, referred to as interest on the debt, for employment generation, foreign currency generation and /or saving and generate revenue income for the government in the form of income tax, as the primary incentive for the lender to engage in the provisioning of long term and /or medium term loan. 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, implementation period, repayment period and the charges associated with the loan as per the appraisal study Ayele,(2015).

As per data obtained from the central database of the bank, the loan recovery performance trend for the last six years 2010/11, 2011/12, 2012/13, 2013/14, 2014/15 and 2015/16 shows 41%, 70%, 51%, 41%, 47% and 53% respectively (DBE, 2016). This shows that the yearly loan collection performance of the bank loans are remains unpaid past their due (or maturity) date. Similarly the non-performing loan (NPL i.e. loan which couldn't meet their debt obligation as per the agreed terms and conditions) against the total portfolio outstanding ratio of the bank for the last six consecutive years 2010/11, 2011/12, 2012/13, 2013/14, 2014/15 and 2015/16 shows 9.73%, 8.36%, 8.62%, 8.2%, 12.54% and 17.71% respectively. Although Development Bank of Ethiopia strives to reduce these ratios using, NPL's resolution strategy, the ratio of non- performing loan against the total outstanding loan portfolio is growing from year to year, and still it is above the bank's tolerance limit (Annual Report of DBE, 2015/16).

Determinates of loan repayment performance have been studied by, Fikirte (2015), emphasized on commercial bank of Ethiopia, non priority working capital loan and short term loans aspects, Adamu,(2013) and Arega, (2016) under development bank of Ethiopia which focused on borrower's characteristics, project characteristics, commodity characteristics, specific sub sector, private borrowers and specific branch aspect, while Ayele,(2015) also under the development bank of Ethiopia which focused on in specific sector, sub sector, product, pre and post credit assessment, processing time aspects. Thus, none of them asses the policy induced aspect, Project follow up attributes, loan provision evaluation criteria, source of equity contribution and nature of commodity aspects.

The aforementioned evidences motivated the researcher to identify the major factors that determine NPLs in Development Bank of Ethiopia. This research differs from the previous research works conducted at the bank and on same topic in its exhaustive examination of factors causing NPLs from policy induced characteristics, Project follow up attributes, evaluation criteria for lending, source of equity contribution from the promoter and nature of the commodity perspective which couldn't addressed so far by previous searchers. Additionally expected major different variables will be tested and finally identify the major determinate factors of project default in project finance.

This study is therefore to assess various bank policy induced variables, Project follow up attributes, commodity specific nature, and source of equity contribution and credit evaluation criteria factors that might cause the occurrence of default in project finance from the credit expert's viewpoint.

1.3. Objectives of the study

1.3.1. General objectives

The main objective of the study is to investigate the factors influencing NPLs in project financing in the case of Development Bank of Ethiopia from the perception of credit experts.

1.3.2. Specific objective of the study

- To examine policy induced characteristics that lead to NPLs.

- To analyze Project follow up attributes contributing for NPLs.
- To identify commodity natures that contributes to default in project finance.
- To investigate the impact of source of equity on default of project financing.
- To assess the impact credit evaluation criteria on default in projects financing.

1.4. Hypothesis of the study

Based on the previous empirical studies and above explanations, the researcher will propose to test the following hypothesis:

H1: Project follow up attributes has positive and significant impact on loan default in project Financing performance of DBE.

H2: policy induced attributes has positive and significant impact on loan default in project Financing performance of DBE.

H3: the financial projection during project appraisal stage, credit evaluation parameters has Positive and significant influence on loan default in project financing performance of DBE.

H4: In the existence of project finance, commodity nature attributes has positive and significant Influence on loan default in project financing performance of DBE.

H5: Source of equity contribution has positive and significant influence on project default in project financing performance of DBE.

1.5. Significance of the Study

Non-performing loans (NPLs) is always an area of concern for banks where the economic uncertainty persist, in developing countries like Ethiopia. The NPLs impact on lenders' profitability of is twofold: a net loss on loans not recovered, and an increase in costs as managing NPLs is extremely time consuming due to its paper intensive workflow and abundance of manual tasks.

A more advanced approach may be required in the future to manage NPLs volumes and the Bank have the opportunity to extract more value than in the past by designing model and adopting digital technologies across the value chain

A high volume of NPLs causes a significant drag on a bank's performance in the form of:

- reduction in net interest income;
- increase in impairments costs;
- additional capital requirement for high-risk weighted assets;
- lower ratings and increased cost of funding, adversely affecting equity valuations;
- reduced risk appetite for new lending; and
- additional management time and servicing costs to resolve the problem
- In the Promotion of the banks goal of supporting development oriented projects etc.

Thus, the findings of this study open some research avenue for those researchers interested in project finance in addition to being a step for the researcher's educational career.

Moreover, identifying major determinants of NPL for DBE financed projects and measuring their significance for project failure will help the Bank to select the focus areas in credit management. The strategies to be proposed in this study may help the Bank to reduce project failures by applying in its project due diligence assessment, appraising, implementation and follow-up process.

1.6. Delimitation/Scope of the study

This study is conducted by focusing on the credit officer's perception who directly involve in project financing from the inception to the end of the project life cycle that means only from the bank side. This is due to the perception of the credit officer's action working on project finance significantly influenced by their perception. Hence, it can also affect the project performance of the loan in project financing. However, this study did not include the opinions of the customers who they have been financed in the form of project loan and defaulted by various reasons. Since these customers have already defaulted and are not genuine for the

bank, it is difficult to obtain reliable information from these customers. Therefore, the scope of the study is restricted to head office credit performers of Development Bank of Ethiopia only.

1.7. Organization of the study

This thesis is divided into five chapters. Chapter one will constitutes background and rationale, statement of the problem, research questions, objectives, research methodology, scope, significance, and limitations of the study. The second chapter presents literature review that provides theoretical and empirical framework to the research. The Third chapter constitutes the discussion of the methodology used in the research. The fourth chapters will contain the main body of the research that comprises data analysis, interpretation, and findings. Finally, the fifth chapter presents conclusion and recommendations.

CHAPTER TWO

2. Review of Related Literature

This section has three parts which is the theoretical literature, empirical literature and summery of empirical review and research gap identification so as to analyze and identify the main determinants of NPL in project finance.

2.1. Theoretical Review

2.1.1. Project definition and concepts

While there are several definitions of projects in the literature, Rondinelli, (1983) defined a project as an organization of people dedicated to a specific purpose or objective. Projects generally involve large, expensive, unique, or high risk undertakings which have to be completed by a certain date, for a certain amount of money, with some expected level of performance. At a minimum, all projects need to have well defined objectives and sufficient resources to carry out all the required tasks.

In lines of the definition provided by Pinto & Slevin (1988), and accepted for the purpose of this research, a project can be defined as possessing the following characteristics:

- A defined beginning and end (specified time to completion).
- A specific, preordained goal or set of goals (performance expectations).
- A series of complex or interrelated activities and phases.
- A limited set of budget or resources.
- An involvement of several people on an ad-hoc basis.

As Turner (1999), stated a project is an endeavor in which human, financial and material resources are organized in a novel way to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives.

A project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other projects or services.

Gittinger (1972) defines projects as a whole complex of activities involved in using resources to gain benefits. He also explains that generally projects form a clear and distinct portion of a larger, less precisely identified program. The whole program might possibly be analyzed as a single project, but by and large it is better to keep projects rather small, close to the minimum size that is economically, technically, and administratively feasible. If a project approaches program size, there is a danger that high returns from one part of it will mask low returns from another. Project is an activity for which money will be spent in expectation of returns and which logically seems to lend itself to planning, financing, and implementing as a unit. It is a specific activity, with a starting point and a specific ending point, intended to accomplish specific objectives. Usually it is a unique activity noticeably different from preceding, similar investments, and it is likely to be different from succeeding ones, not a routine segment of ongoing operations. It will have a well-defined sequence of investment and production activities, and a specific group of benefits, that we can identify, quantify, and usually determine a money value for. Often a project will have a partially or wholly independent administrative structure and set of accounts and will be funded through a specially defined financial package.

- **Plans and Projects**

As stated by Gittinger (1972), projects provide an important means by which investment and other development expenditures foreseen in plans can be clarified and realized. Sound development plans require good projects, just as good projects require sound planning. The two are interdependent.

Sound planning rests on the availability of a wide range of information about existing and potential investments and their likely effects on growth and other national objectives. It is project analysis that provides this information, and those projects selected for implementation then become the vehicle for using resources to create new income. Realistic planning involves knowing the amount that can be spent on project activities for a particular kind of investment.

Well-analyzed projects often become the vehicle for obtaining outside assistance when both the company and the external financing agency agree on a specific project activity and know the amount of resources involved, the timing of loan disbursements, and the benefits likely to be realized. But project analysis should not be confined to only those investments for which external financing will be sought. In the words of Gittinger (1972), if carefully designed and high-yielding projects are offset by essentially unplanned investments, and then the net contribution to the organizational objectives is substantially undermined.

Projects are a part of an overall development strategy and a broader planning process. Within the broad strategy, analysts must identify potential projects that address the policy and organizational priorities. Generally there are more than one project alternatives available with a company for investment, of these; all the projects being prepared and analyzed should use a consistent set of assumptions about such things as the relative scarcity of investment funds, foreign exchange, and labor. All the project analyses should use the same assumptions about the company policies and objectives to be reflected.

- **Project Life Cycle**

As maintained by Prasanna C. (2002): A sequence of phases through which a project must pass. There are a variety of definitions that generally reflect different industry practices. The generally accepted sequence is: pre-feasibility (validation of concepts); feasibility (detailed investigation of viability) design; contract (procurement); implementation; commissioning; handover and operation. Project life cycle generally defines:

(1) The tasks to be accomplished in each phase or sub- phase

(2) The team responsible of each of the phases defined

As advocated by Archibald & Voropaev (2003), there is a general agreement that the four broad, generic project phases are (common alternative terms are shown in parentheses):

(1) Concept (initiation, identification, selection.)

(2) Definition (feasibility, development, demonstration, design prototype, quantification.)

(3) Execution (implementation, realization, production and deployment, design/construct/ commission, installation and test.)

(4) Closeout (termination, including post-completion evaluation.)

The number of phases in a project life cycle depends on a variety of factors like nature of industry, type of output, size of project etc.

Robert et al (2003) have developed a theoretical sequence of phases that may be identified with most of the projects as is outlined below:

Project management is the application of knowledge, skills, tools, and techniques to a broad range of activities in order to meet the requirements of a particular project. There are phases of project management that, road map to accomplishing the project idea such as conceptual, planning, testing, implementation or execution and closure.

It is generally better in planning projects to analyze successive increments or distinct phases of activity; in this way the return to each relatively small increment can be judged separately. Like products follow a product life cycle, projects follow a project life cycle that has certain phases of development.

Dividing a big project in manageable chunks makes the complex task of managing projects easier, these chunks in a sequential form can be termed as project phases which can further be divided into sub-phases and a collection of these phases makes what is called as a project life cycle. Each project phase is marked by completion of one or more deliverables. Although many project life cycles have similar phase names with somewhat similar deliverables required, very few are identical. Most have four or five phases, but some have nine or more. Sub-projects within projects may also have distinct project life cycles. Importantly, these phases are not always consecutive in nature but are more simultaneous.

- **Characteristics of a project life cycle**.

According to Adamu, (2013), risk and uncertainty is highest at the beginning stages of a project and reduces thereafter as the project continues. The ability of the stakeholders to influence the

final characteristics of the project's product and the final cost of the project is highest at the start and gets progressively lower as the project continues. Also the cost of correcting an error increases as the project goes along.

Therefore we can summarize that projects are unique in nature and much depends on the industry, size, location, nature, complexity, business environment etc. in which they operate. The truth appears to be that the concept of 'one size does not fit all' is a good point to start with in certain cases.

2.1.2. Project financing definition and concepts

Project Finance is a financing mechanism where a firm (project sponsor) forms a separate legal project company whose assets and cash flows are separated from the firm and provides equity and raise non-recourse debt to carry out a specific business operation for a finite period of time. On the other hand, the firm (non-sponsor) can finance project without legally separating it from its existing assets, and this method of financing is called corporate finance. (Zinat, 2010).

Esty (2001) further explains the difference between Project Financed investments from corporate financed investments as the assets are financed as stand-alone entities rather than as part of a corporate balance sheet (Esty and Megginson, 2001). In the case of project financing, although creditors may have partial recourse for a period of time or for a fraction of the total loan amount, project loan by its definition is non-recourse to sponsoring organization. (Esty and Megginson,2001).

In addition to the above main difference, project finance is characterized by high investment costs and high risks. (Neila, 2014).

In most of the cases, the types of financing covered by project financing is large complex and expensive installation that might include power plants, chemical processing plants, mines, transportation infrastructures, telecommunication infrastructures, etc (Basel, 2001).

In addition, project finance may take the form of financing of the construction of a new capital installation or refinancing of an existing installation, with or without improvements. The borrower is usually a special purpose entity that is not permitted to perform any function other

than developing, owning and operating the installation. The consequence is that repayment depends primarily on the project cash flow and the collateral value of the project's assets (Basel, 2001).

❖ **Basic Characteristics of Project Finance**

Based on the review of various literatures the characteristics of project Finance is summarized as follows; (E.R. Yascobe (2014), Enzo (2012), Basel (2001), Zinat (2010))

Capital-intensive: Project financings tend to be large-scale projects that require a great deal of debt and equity capital, from millions to billions of dollars.

Highly leveraged and long term: The transactions tend to be highly leveraged with debt accounting for usually 65% to 80% of capital in relatively normal cases. The tenure for project financings can easily reach 15 to 20 years.

Independent entity with a finite life: contemporary project financings frequently rely on a newly established legal entity, known as the project company, which has the sole purpose of executing the project and which has a finite life so it cannot outlive its original purpose.

Non-recourse or limited recourse financing: Since these newly formed entities do not have their own credit or operating histories, it is necessary for lenders to focus on the specific project's cash flows. That is why, "the financing is not primarily dependent on the value of the physical assets involved or collateral." Thus, credit evaluation or investment decision process, as opposed to corporate financing, bases mainly on the feasibility study of the project and its sensitivity to the impact of potentially adverse factors."

Controlled dividend policy: To support a borrower without a credit history in highly leveraged projects, the project's income goes to servicing the debt, covering operating expenses and generating a return on the investors' equity. This arrangement usually has contractually binding.

Many participants: It is not rare to find many parties playing major roles in implementing the project. This situation requires allocation of risk through establishing contractual arrangements like turnkey agreement between the

project company and the other participants.

Project finance is a method of raising long-term debt for major projects and lending of them relaying on the cash flows generated by the project alone for repayment (Yescombe, 2002). The reason for non-recourse or limited recourse financing is that in many cases the size of the project may be larger than the size of the participating companies' balance sheet (Fight, 2006). Project finance, therefore, is a way of protecting the corporate balance sheet from suffering of the incremental costs of a failing project (Esty, 2004).

This means that the failing of projects largely affects the balance sheet of financing organization than the sponsoring companies/promoters. The financing institutions are, therefore, undertake market, technical, financial, economic and ecological analysis in order to reduce the project failure and increase project success (Chandra, 2002).

Bank Lending in Project Finance

In the project finance business, banks may offer two kinds of service; advisory service and financing services. The project finance has two sources of funds; debt and equity. Debt capital is usually provided by commercial Banks and international investment banks while equity capitals is usually provided by project sponsors and outside equity investors. (Enzo, 2012)

Banks are the largest providers of debt capital in project finance and the financial structure of the project (leverage ratio) is very important in convincing bankers to provide capital. It implies that banks must pay particular attention to the evaluation of the credit risk of the project. Hence, the failure of the project and the subsequent borrower's insolvency may damage lenders heavily. (Enzo, 2012).

The assessment of economic and financial feasibility of the project made by banks should primarily evaluate the expected economic return of the project on medium and long term, rather than focusing on collaterals provided by sponsors or third parties. To assess the

"bankability" of the project is necessary to carry out a feasibility study. Banks have to differentiate bankable projects from non-bankable ones. (Enzo, 2012).

Preliminary test of project practicability (viability test) is the first step for banks. A "dynamic" analysis is necessary in funding project finance because lender's primary security is the future revenue stream of the project. In particular, a lender should deeply evaluate the degree of innovation of the project, the professional skills of people who execute and manage the project, the capabilities, competencies, and knowledge of firms involved in the project, the reaction of the target market to the introduction of new services and products. (Enzo, 2012)

Project finance refers to the financing of long-term infrastructure, industrial or public services using limited recourse long-term debt raised by an enterprise operating in a focused line of business in accordance with contractual agreements. Principal and interest payments are made solely from cash flows generated by the enterprise. Projects are usually undertaken by special purpose vehicles that can only engage in the business of the project – the scope and duration of which is defined in the contractual arrangements entered into by the special purpose vehicle. Projects are usually structured with recourse to the special purpose vehicle's assets, and with only limited recourse to the project sponsors' other assets which are therefore outside the scope of collateral available to secured debt providers in the event of the failure of the project

- **Role of Debt in Project finance**

Debt is principally repaid using cash flows generated from the operations of the project:

- Limited recourse to project sponsors;
- Secured by the project's assets or contracts, i.e. the power purchasing agreement, the off-take or the asset having been created;
- First priority on project cash flows is given to the Senior Lender(s);
- Consent of the Lender is required to disburse any surplus cash flows to project sponsors;
- Riskier projects may require security/guarantees of the project sponsors.

2.1.3. Project Default /NPL/ definition and concepts

There is no commonly accepted definition for project failure. The definition adopted for the purpose of this study is the operational definition by NBE Directive 2012, which

defines Non-performing Loans as loans whose credit quality has deteriorated such that full collection of principal and/ or interest in accordance with the contractual repayment terms and conditions is not realized for more 12 (Twelve) months from the scheduled payment date or maturity. These loans categorized under:

1. **Substandard:** Medium and long term loans past due 12 (Twelve) months or more, but less than 18 (Eighteen) months.

2. Doubtful: Medium and long term loans past due 18 (Eighteen) months or more, but less than 3 (Three) years.

3. Loss: Medium and long term loans past due 3 (Three) years or more NBE directive No SBB/52/2012 sub 7.1.3.

Different authors define project failure from different perspective and context. According to Carlos (2002), a project is considered as failed when it has not delivered what was required, in line with expectations. Therefore, in order to succeed, a project must deliver utilizing the minimum cost possible, the expected quality, and on the time scheduled; and it must deliver the benefits presented in the business case.

Even if a project has delivered everything that was in the detailed project designs, it may still be considered a failure if it did not include vital elements that the key stakeholders needed (Carlos, 2002). According to him, project success and failure is not just about the facts, nor is it simply about what was delivered. It is also, crucially, about how the project is perceived.

McConnell (2010) expanded the definition of project failure more than expectation. According to him, project failure is a situation when a given project, which consumes human, material and financial resources, fails to deliver an acceptable return on investment, so it is terminated before the completion, no sufficient value is produced, and no benefit is delivered to the customer. The project is considered “failed” when it does not produce results as proposed, exceeds its budget and time, and does not meet specifications. He concludes that a project is termed as failed when it does not

meet the following criteria:

- It is delivered out of schedule (time constraint);
- It is delivered out of budget (cost constraint);
- It is delivered out of scope (scope constraint); and
- The project product does not work as expected.

The Ethiopian Foreclosure law (proclamation number 97/1998, Article 3) states that the bank financed business can be considered as failed and foreclosed when a Bank's claims are not paid within the time stipulated in the contract. This definition is also contextually similar with McConnell definition that says projects are considered as failed if not produce results as proposed or expected, because Bank financed projects are expected to settle their debt as per loan contract agreement.

Similarly, the nonperforming loan directive of National Bank of Ethiopia Number SBB/48/2010 stipulates that those financed projects failed to pay the due loans for more than three years to be classified as loss loan and obliged the bank to hold 100% provision.

DBE's Corporate Balanced Scorecard (2010), considering the above definition of project failure in to consideration, DBE defines successful projects to fulfill the following criteria - otherwise to be considered as failed according to.

- Properly meet their debt services
- Performing above their breakeven point
- Meeting their objectives by generating tax revenue to the government, employment opportunity and generate or save foreign currency.

DBE's definition of project success includes meeting of project objective in addition to expectation of fulfilling debt obligation that stipulated in foreclosure law and non-performing directives since the strategic mission of DBE goes far more than loan collection fulfilling its role as a development partner. The success of projects financed by DBE, therefore, measured by overall contribution to the national economic growth.

2.1.4. Determinants of NPL.

Scholars dwelling on project in general identified various causes for project failure/NPL/. Some of the scholars' views are as follows:

- **Unknowledgeable Requirements Set**: (Enzo, 2012) Project failure due to poor requirements management takes place when the project team delivers the product without having a clear understanding of what the customer wants and without having any real knowledge of the requirements.
- **Scope Creep**: (Yescombe, 2002) the next of the top project failure reasons refers to a situation when project scope does not correlate with other constraints like time and cost, and the project is likely to be delivered over budgeted and delayed.
- **Absence of Change Control System:** (Enzo, 2012) A change may create a new condition within your project. If no change controls system is introduced, your team will fail to respond to the new condition. Uncontrolled changes will cause project failures.

- **Project follow up attributes:** Rondinelli, (1983) The key goal of the follow-up process is to monitor the course of a project and adjust project activities when needed to ensure effectiveness of project results. The project follow-up process starts with the beginning of project activities, lasts throughout project implementation, and ends up with completion of project goals. Another name of this process is project delivery management.
- **Policy induced variables:** (Yescombe, 2002) refers to nation wise and bank level investment and business related policies and procedures. These variables are expected to have positive and/or negative effect on project finance performance of the bank.
- **Commodity nature attributes:** (Yescombe, 2002) it is quite clear that risk exposure of all commodities/products is not the same.

- **Source of equity contribution:** Rondinelli, (1983) As it is, known Banks do not provide 100% finance in establishing development projects. Promoters/borrowers are expected to raise some amount total project cost.

- **Credit evaluation criteria**: McConnell (2010) project return overestimation leads to financing of unviable businesses in addition to shortening of payback period. Short payback period means short repayment period since project financing solely depends on cash flow for its repayment. The repayment over burden created because of short repayment period leads to incapability to serve the debt commitment and project failure.

2.2. Empirical Results and Facts

So far, the researcher found two articles produced on determinants of default in project finance, in the case of Commercial Bank of Ethiopia by Fikirte (2015). And Adamu, (2013) on the determinants of failure for project financed by Development Bank of Ethiopia. Adamu, (2013) applied explanatory research; fifteen determinant variables were used to measure their significance for DBE financed projects failure. All of the variables, except project implementation time overrun have shown that the expected magnitude of influence on the dependent variable (project failure) were significant. One of the key findings of the researcher revealed and inducted that decrease of project failure as time overrun increases for project implementation. According to the researcher's observation, this was attributed to the intervention of the Bank to protect the projects from failure through rescheduling of loan repayment, reallocation of loan and interest payment weaving. These corrective measures were found statistically significant in reducing project failure. The project specific explanatory variable, project size that proxied by investment cost of the project was exhibited the same effect on project performance and statistically insignificant. Out of three project specific variables included in the study two variables (sales shortfall and recruitment variation) were found statistically significant. The remaining, relevance of the project owner's educational background or experience was found statistically insignificant. These statistically significant variables, sales shortfall and recruitment variation clearly have shown that the seriousness of marketing knowledge gap and poor understanding about the importance of human resource for project success respectively in case of Ethiopian project owners.

Regarding creditor (Banks') specific explanatory variables, the study considered operational projects and estimated the significance of cash flow over estimation for project failure. Loan appraising capacity and technical support were mentioned as project success cause in this study but not measured in any of regression model they used. In the study he considered as

explanatory variables and measured in logit model. However, their estimation in logit model has exhibited that the insignificance of cash flow overestimation and technical support through follow-up operation for DBE project failure Adamu, (2013).

According to the findings of the researcher overestimation of cash flow, the result indicated that the positive relation of the variable for project failure.

Even though, investment cost overrun of the project used to measure different explanatory variable in his study, the result of the same has shown similar magnitude on project performance and statistically significant. The impact of economic growth on project performance measured using GDP indictor of the economic sub-sectors in which the project is categorized considered in this study. The estimation of this inductors has shown that statistical not significant Adamu, (2013). In the study macroeconomics explanatory variable, inflation rate is tested but found statistically insignificant.

According to Adamu, (2013), regarding sociopolitical variable, the researcher had used population size, political regions, literacy level and religion dominancy. The estimation results of population size in the study has shown that the statistical significance of the variable and similar direction of influencing project performance. The sociopolitical variables, the result of literacy level has shown statistical significance for project failure. Political regions and religion dominancy, which captured by dummy variable are also found statistically insignificant.

Fikirte, (2015), used survey method of data gathering instruments survey, document review and an in-depth interview. The questionnaire was distributed to all 52 credit officers in Commercial Bank of Ethiopia, but only 40 have completed and returned successfully. According to the study most of the respondents had ample experience in the banking area as well as in the credit process. Moreover, they were well qualified. Hence, they had a better knowledge in project finance and determinants of default. According to Fikirte, (2015), the results obtained from the survey on; bank specific determinants of default, borrower specific determinants of default and external factor determinants of default are summarized against the literatures and presented as follows.

- **Bank Specific Determinants of Project Loan Default**

The empirical study made by Fikiret (2015) indicates the existence factors in connection with credit origination i.e. poor due diligence assessment to know the customer and weak credit negotiation have found to be the major determinant of loan default as per the results obtained from the survey. In addition the interview result also affirms these facts.

Weak credit assessment made by the Bank and lack of proper skills of the loan officers were found to be the cause of default, as per the study made by Fikirte, (2015). However, speedy loan processing due to external pressure as a factor for loan default was not supported by the survey result.

Additionally, there is a significant relationship between over-finance and the occurrence of NPL, as the survey result indicated. The survey result also indicates the existence of strong relationship between poor loan monitoring and NPL. Moreover, according to the researcher the interview result and the document study have supported such finding.

However, inadequate debt recovery regulations were not mentioned as a cause of default, as per the study made by Fikirte (2015).

- **Borrower Specific Determinants of Project Loan Default**.

Fikirte, (2015), factors in connection with the character of the borrower, the integrity of the borrower, fund diversion and willful default as a cause of default. Selection of unsuitable and unviable schemes and projects are found to be the cause of default. In connection with management capacity problem, knowledge limitation of the borrower and performance of the entrepreneur as cause of loan default.

- **External Factors Determinants of Project Loan Default**

Fikirte, (2015), data or information constraint was the major external cause of default as the survey result indicated. Additionally, inflation and exchange rate fluctuation as significant factors for loan default. However, GDP growth, lack of infrastructure and government policy had not obtained much support by the survey result.

2.3. Summary & Research gap

Based on the above empirical studies determinants of default can be categorized as external/ macroeconomic factors, bank specific factors or borrower specific factors. External macroeconomic factors includes natural disaster, government policy, interest rate, energy crises, unemployment, inflation, GDP growth, exchange rate, sensitivity to change in inflation, economic cycle, exchange rate, unemployment and asset and house price as a major external determinants of loan delinquency.

Bank specific determinants of non-performing loan is also identified by Fikirte, (2015) as week credit assessment, lack of proper skill by the loan officer, speedy loan processing due to external pressure, agency problem, credit policies, loan recovery procedures, loan appraisal process, lenient credit terms, credit growth, poor credit assessment, aggressive lending, compromised integrity, ownership structure of the bank, bank size and weak institutional capacity.

Borrower specific determinants of non-performing loan are identified by various studies as integrity of the borrower, lack of technical training for loan beneficiaries, under-developed credit culture, and willful default by the borrower, knowledge limitation of the borrower, fund diversion for unintended purpose and misuse of loan amounts as a reason for default.

Various determinates of non-performing loans have been identified by Adamu, (2013), and Fikirte, (2015) these determinates have been categorized under three broad categories namely external factors, bank-specific factors and borrower's specific factors. However, the following gap is identified in the literatures;

- Adamu, (2013), and Fikirte, (2015) studies have emphasized more in specific sector, sub sector, commodity, product, private borrowers, branch and borrower's characteristics. But none of them assessed project follow up attributes, policy induced aspects, commodity nature attributes, credit evaluation criteria and source of equity contribution separately and exhaustively as this study.

Considering the above gap, this study therefore is aimed at assessing impact of project follow up attributes, bank policy induced variables, commodity specific nature, source of equity contribution and credit evaluation criteria factors that the researcher believes to cause NPL.

CHAPTER-THREE

3. RESEARCH METHODOLOGY

3.1. Research Design

The research design sets the conceptual structure within which a study is conducted. It constitutes the blue print for collection, measuring, presentation and analysis of data collected. Both quantitative and qualitative methods are employed. Since the two methods have its own strength and limitations, the research has adopted both methods to benefit from the strength and avoid/minimize the limitations arising from using a single method.

In this study, both descriptive and explanatory analyses were used. Descriptive statistics like table, mean, percentage, etc used to describe the data. Explanatory analysis using econometrics probit regression models were employed to analyze cause-effect relation between determinants of default and DBE financed projects from the credit performer's perception point of view. Setting of major determinants of default for DBE financed projects will be done based on literature review and factors unique to DBE projects. The researcher collected the data using questioner data at one point in time to know the determinant of default in project finance from the credit performer's point of view.

3.2. Target Population and Sample Size.

The target population is all 54 credit performers of development banks of Ethiopia excluding secretaries and other supportive staffs that have no direct involvement in the credit operation. Attempting to include the opinion of all the target sample size of 54 questioners were distributed physically , however ,due to unavailability of some credit officers in their job and other reasons only 50 of them have filled and returned the questioner successfully. Hence, the respondent rate is 92.6%. In addition, since the population is homogeneous; the responses from the 50 sample represent the opinion of the population.

3.3. Data collection Instruments

Methods of data collection primarily depended on standard questionnaires prepared by Swaminathan (2004) which was prepared in the form of open ended and closed ended questioner. However, to measure the determinant of default rate at DBE the researcher modify in relation to the study for that matter the researcher test the reliability and check the

dependability. For the purpose of data collection, the researcher used closed-ended and open-ended structured questionnaires. Closed-ended questionnaires were prepared on the basis of determinant of default variables from the credit expert's perspective at DBE. Thus, closed ended questionnaires helps to avoid pressure up on the respondents in any direction and better be able to obtain the required data in the study area.

The questionnaire was divided in to four sections. The first section contained the demographic characteristics of the respondents were requested to provide information about their gender, age, year of service or experience and education level. The second section contains opinion of respondents on classification of loans as non performing and performing. The third section was designed to incorporate all possible project follow up attributes, policy induced attributes, commodity nature attribute, source of equity contribution and credit evaluation criteria parameter that leads for project default. This section of the questionnaire was designed to enable the researcher to gather information about the determinants of NPL in project finance of Development Banks of Ethiopia. For all questionnaire included in section 3, the respondents were requested to indicate their feeling on the questioner to measure weighted as follows: 1=strongly disagree, i.e., very much dissatisfied with the case described, 2=disagree, i.e., not satisfied with the case described, 3=neutral, i.e., uncertain with the case, 4=agree, i.e., feeling alright with the case described, and 5= strongly agree, i.e., very much supporting the case described.

The fourth section contains open ended questions which seeks the general comments of respondents about the project finance practice in DBE that contribute to the occurrence of project loan default. In order to avoid biases by the respondents, the purpose of the study, i.e. only for the academic purpose, and the confidentiality of the response were explained at the beginning of the questionnaire

3.4. Methods of Data Analysis

After the data was collected from primary source it was checked and in-house editing was undertaken to detect errors that had been committed by the respondents. Then, the edited data were coded and manually entered in to statistical package for social science (SPSS) version 20 computer software. Moreover, both qualitative and quantitative methods of data analysis

techniques were employed. Analysis of data in this research was done by using descriptive statistical methods like: frequency, mean, standard deviation and inferential statistical methods such as: correlation and probit regression. In addition to these, it was analyzed properly by using the output of probit regression analysis model. The regression analyses were conducted to determine to what extent the independent variables i.e. project follow up attributes policy induced attributes, commodity nature, source of equity contribution and credit evaluation criteria explains the dependent variable which is NPL. Correlation analysis was conducted to test the proposed hypothesis whether there is a positive significant relationship between the dependent variable and the independent variable. Finally, in the discussion and summary part of the study, the data obtained from the survey will be analyzed against the literatures. The information obtained from the document study will also summarized as additional information to reinforce what will be obtained from the survey result.

3.5. Econometric Model Selection

In order to achieve the objective of the paper, the study was conducted primarily based on structured questioner data. The advantage of using questioner data and knowing the determinant variable was examined using descriptive statistics, correlations, regression analysis and inferential statistics. Correlation matrix was used to examine the relationship between the dependent variable and explanatory variables. The dependent variable in this study is a dummy variable that takes only two values specifically 0 and1. Therefore, a probit regression model is the fitted model for this kind of research. Z-static is used to determine the significance level of each independent and control variable in influencing default. The regressions model was run using probit regression, to test the casual relationship between the dependent and independent variable to determine the most significant and influential independent variables and other control variables affecting the loan default rate at Development Bank of Ethiopia. In connection to this, the general model for this study, as is mostly found in the existing literature is represented by;

$$Z_{i,t} = \alpha + \beta X_{i,t} + e_{i,t}$$

The subscript ‘i’ representing the cross-sectional dimension and‘t’ denote the time-series dimension. The left-hand variable ‘yi,t’ , represents the dependent variable in the model, which is NPL at DBE. ‘xi,t’ Contains the set of independent variables in the estimation

model, is taken to be constant over time 't' and specific to the individual cross-sectional unit 'i'. If 'α' is taken to be the same across units, then probit model regression provides a consistent and efficient estimate of 'α' and 'β'.

In light of the above model, the structured questioner data constructed by taking independent variable which determines loan default at DBE was analyzed by using the probit regression model. The probit regression model underlying response variable 'Zi' in this study defined by the regression relationship of explanatory variables that contain major determinants of NPL at DBE , project follow up aspects, policy induced attributes, source of equity contribution, credit evaluation criteria and commodity nature attribute factors as shown here below.

$$Zi = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 4X5 + \varepsilon$$

Where,

Zi = Projects financed in DBE are NPL's

β = Vector of Unknown parameters.

X1= Project follow up attributes

X2= policy induced attributes

X3=source of equity contribution

X4= credit evaluation criteria

X5= Commodity nature attributes

ε = an error term

β_1, β_2, β_3, β_4 and β_5 , = slope of each independent variables and they measure by what extent affect the dependent variable, i.e NPL in this case.

3.6. Definition of Variables

3.6.1. Dependent (explained) variable

The dependent variable in this research is NPL, and it is measured as a dummy variable which takes values 0 and 1. 1 for those financed projects that have fully met its debt obligation

based on the contractual agreement. 0 for those financed projects that do not able to meet its debt obligation based on the contractual agreement. The loan default of the bank or NPL's of the bank characterized by the financed project borrowers that haven't met their debt obligation as per agreed covenant i.e. didn't repaid their loans, don't create employment opportunity, haven't generate or save foreign currency and generate income tax for the government.

3.6.2. Independent (Explanatory Variables)

In the study, there are five independent variables that explains the dependent variable such as project follow attributes, policy induced aspects, credit evaluation criteria, commodity nature attributes and source of equity contribution.

- **Project follow up attributes:** is a general process for controlling and monitoring status of project work to ensure that the project is performed on schedule, within budget and as per requirements. It uses feedback on costs, schedules, requirements, employee performance, and other critical factors to determine project success.

The key goal of the follow-up process is to monitor the course of a project and adjust project activities when needed to ensure effectiveness of project results. The process achieves this goal by performing the following 6 steps:

- Managing variances to confirm there is no uncontrolled change that causes project instability
- Controlling scope to ensure the project is performed within accepted boundaries and requirements.
- Monitoring spending to avoid cost overruns and budget failure
- Responding to risks to keep the project feasible and effective
- Assuring quality to ensure customer acceptance of deliverables
- Controlling schedules to prevent delay and procrastination

The project follow-up process starts with the beginning of project activities, lasts throughout project implementation, and ends up with completion of project goals. Another name of this process is project delivery management (www.Mind tool/follow-up/.com)

- **Policy induced variables:** it can be explained by various national and bank level investment and business related policies and procedures. These variables are expected to have positive and/or negative effect on project finance performance of the bank.

Commodity nature attributes: it is quite clear that risk exposure of all commodities/products is not the same. For example, some commodities like textile and garment, leather and tannery have great contribution for non performing performance in project finance at DBE.

- **Source of equity contribution:** as it is known DBE does not provide 100% finance in establishing development projects. Promoters/borrowers are expected to raise some amount total project cost. For longer period of time the equity contribution of the borrowers was held at 30% for both local and foreign promoters, until it is modified to 25%:75% for local promoters and 50%:50% for foreign investors at the end 2016. The researcher believes that issues related to equity contribution have contribution for increment of NPLs.

- **Credit evaluation criteria**: project return overestimation leads to financing of unviable businesses in addition to shortening of payback period. Short payback period means short repayment period since project financing solely depends on cash flow for its repayment. The repayment over burden created because of short repayment period leads to incapability to serve the debt commitment and project failure. This determinant, therefore, is measured by percentage change between DBE's appraisal cash flow and follow-up cash flow of the project. Generally, expected Signs of the above listed explanatory Variables are presented in table 3.1 as follows:

Table 3.1: Expected Sign (+/-) of Explanatory Variables in this Study

Explanatory Variables	Expected Sign	Some empirical evidence
Project follow up attributes	+	Yescombe's (2002)
Policy induced attributes	+	Shingjerji(2013),Hyun&Zhang(2013)
Commodity nature attributes	+	Swamy(2012), Selma and Jouini(2013),
Source of equity contribution	+	-
Credit evaluation criteria	+	Farhan *et al*.(2012), Sakiru *et al*(2011)

sources: yescombe's (2002), Shingjerji(2013), Hyun&Zhang(2013), Selma and Jouini(2013), Farhan et al.(2012), Sakiru et al(2011) and other studies included in the study.

- **Notes:** A positive sign "+" indicates direct impact; whereas a negative sign "–" indicates an inverse impact of explanatory variables on dependent variable.

CHAPTER FOUR

4. Results and Discussions

This chapter is organized into six sections; in the first section the general information of the respondents obtained from the survey are presented and analyzed. The second part is the reliability test of the data obtained. The third part is the relationship between the dependent variable with the explanatory variables. The fourth section is the correlation analysis between the independent variables. The fifth part shows the determinant of loan default in project financing. The six and the last section is about the summery of the research discussion and analysis obtained by the survey i.e. all the results obtained from the sources are summarized and analyzed against the literatures.

4.1. General Information of the Respondents

This section shows the respondent's general profile regarding their current job position in the Bank, age of the respondent, gender, level of education as well as their work experience in the overall banking business and at DBE in particular.

- **Respondents' age, sex and educational background.**

Concerning to the age of the respondent s',54% are between the age of 31 to 40 years old, 22% are between the age of 21 to 30 years old, 20% are between 41 to 50 and 4% are at the age of above 50 years old. On the other side regarding to gender of the respondent 78% of the respondent are male and the remaining 22% of the respondent are female. Furthermore, the educational background of the respondents', 62% have at least bachelor's degree and 38% have at least a master's degree (See table 4.1.) Hence, from the survey we can deduce that the respondents are well qualified and in relation to their age most of the respondents are youngsters.

Table 4.1: General Information of the respondents

Characteristics	Values	Frequency	Percentage
Age	Less than 20 Years	0	0
	21 to 30 Years	11	22.0
	31 to 40 Years	27	54.0
	41 to 50 Years	10	20.0
	More than 50 Years	2	4.0
Gender	Male	39	78.0
	Female	11	22.0
Educational level	Diploma	0	0
	1st Degree	31	62.0
	2nd Degree	19	38.0
	PhD	0	0.0
Service year in the Bank	1-5	14	28.0
	6-10	18	36.0
	11-15	13	26.0
	16-20	4	8.0
	>20	1	2.0
Position of the respondent	V/President	0	0.0
	Director	5	10.0
	Team Manager	11	22.0
	Senior/loan officer	34	68.0

(Source; Survey result and computation)

Hence, from the above table shown, it is possible to conclude that from the collected data of 50 respondent most of the banks' staff are young, male and equipped with well qualified personnel.

- **Respondents' Experience/service year in the Bank**

As shown in the above table 4.1, 36 % of the respondents' have an experience of 6 to 10 years ,26% of the respondent have experience of 11 to 15 years ,28% of the respondent have experience of 1 to 5 years , 8% of the respondent have 16 to 20 years and 2% of the respondent have experience of above 20 years experience at DBE (See table 4.1). Hence, we can deduce that respondents have enough experience in the banking business. From the table shown above, we can realize that most of the respondents' have adequate experience in the project finance or banking operation in general (see table 4.1). Accordingly, their opinion and view on the existence and determinants of NPL is based on their ample and sufficient knowledge and experience in the banking business operation in particular and their perception actually influenced the actual performance of the loan.

- **Respondents' Current Position in the Bank.**

A large portion of the respondents are Senior/loan officers who represents 60%, of the responses, followed by team manager (principal officers) and directors which represents 22% and 10% respectively (See table 4.2). The aggregate population of DBE also has almost similar composition and it indicates that each and every activity is carried out in team base (i.e. team work).

The respondents' current positions in the Bank indicate that all the respondents who participate in the project finance, from credit origination to final loan recovery. Hence, the respondents are very familiar about project finance and causes of NPL.

4.2. Reliability Test

As stated by "Hair et al., (2007) reliability indicates the extents to which a variables or set of variables is consistent in what it is intended to measure" (Cited by Siddiqi; 2011:20). Reliability analysis used to measure the consistency of a questionnaire. There are different methods of reliability test, for this study Cronbach's alpha is considered to be suitable. Cronbach's alpha is the most common measure of reliability. Cronbach's alpha reliability test of the study depicted below.

Table 4.2. Reliability test

Dimension	Number of items	Cronbach's alpha
Project follow up attributes	5	.868
Policy Induced Attributes	6	.754
Commodity Nature Attributes	3	.811
Source of Equity Contribution	4	.795
Credit Evaluation Criteria	5	.768
Over all attributes	23	0.738

(Source: SPSS Output from Survey Data, 2017)

As shown in the above table, the Alpha coefficient for this study for the overall scale calculated as a reliability indicator is 0.738. As described by Andy (2006) the values of Cronbach's alpha around 0.7 is classified as good. The alpha vales in this study both the independent and the overall attribute are above 0.7 and therefore it is conclude to be good.

4.3. Relationship between Dependent and Independent/Explanatory Variables

4.3.1. Poor project follow up and monitoring contributes for increment of non performing loans/project default

Table 4.3 below summarizes the impact of poor project follow up and monitoring on non performing loans from the credit experts view point. The result indicated below from the observed population 71.4% of them have strangely agree and 28.6% of the population sampled also agreed, that poor project follow up and monitoring has contribution for increment of NPL .

Table 4.3. Poor project follow up and monitoring contributes for NPL.

			Believe loan default		Total
			No	Yes	
DBE's Poor project follow up and monitoring contributes for increment of non performing loans/project default	Strongly Disagree	Count	0	0	0
		% within Believe loan default	0.0%	0.0%	0.0%
	Disagree	Count	1	0	1
		% within Believe loan default	6.7%	0.0%	2%
	Neutral	Count	2	0	2
		% within Believe loan default	13.3%	0.0%	4%
	Agree	Count	8	10	18
		% within Believe loan default	53.3%	28.6%	36%
	Strongly Agree	Count	4	25	29
		% within Believe loan default	26.7%	71.4%	58%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 15.008 Pr = 0.004

The P Value of the result is .004 which is less than the minimum standard for P value=0.05. Thus the relationship between poor project follow up and monitoring and loan default is strong/significant. From this we can understand that poor project follow up and monitoring has considerable contribution for increment of NPL.

4.3.2. The follow up reports produced by the Bank do not enables the Bank's top management make informed decision.

As we see from table 4.4 below, from the observed population 57.1% of them have agree and 20% of the population sampled strongly agreed, that the follow up reports produced by the Bank do not enables the Bank's top management pass informed decision. This means, the consequence not passing informed decision by the Bank's top management sturdily contributes for increment of NPL.

Table 4.4 The follow up reports produced by the Bank…

			Believe loan default		Total
			No	Yes	
The follow up reports produced by the Bank do not enables the Bank's top management pass informed decision	Strongly Disagree	Count	0	0	0
		% within Believe loan default	0.0%	0.0%	0.0%
	Disagree	Count	2	5	7
		% within Believe loan default	13.3%	14.3%	14%
	Neutral	Count	2	3	5
		% within Believe loan default	13.3%	8.6%	10%
	Agree	Count	7	20	27
		% within Believe loan default	46.7%	57.1%	54%
	Strongly Agree	Count	4	7	11
		% within Believe loan default	26.7%	20%	22%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 11.098 Pr = 0.0094

The P Value of the result is .0094 which is less than the minimum standard for P value=0.05. Thus the relationship between not making informed decision by the bank's top management and loan default is strong/significant. From this we can understand that not passing informed decision by the Bank's top management vigorously contributes for increment of NPL.

4.3.3. DBE's financing of second hand machinery's by relocating from abroad

Table 4.5 below summarizes the impact of relocating second hand machinery from abroad on loan default from the credit experts view point. The result indicated below shows from the observed population 28% of them have strongly agree and 34% of the population sampled also agreed, DBE's financing of second hand machinery's by relocating from abroad has contribution for increment of project default .

Table 4.5. Relationship with relocating second hand machinery

			Do you Believe loan default		Total
			No	Yes	
DBE's financing of second hand machinery's by relocating from abroad has contribution for increment of project default	Strongly Disagree	Count	2	0	2
		% within Believe loan default	13.3%	0.0%	4%
	Disagree	Count	2	3	5
		% within Believe loan default	13.3%	8.6%	10%
	Neutral	Count	5	7	12
		% within Believe loan default	33.3%	20%	24%
	Agree	Count	2	15	17
		% within Believe loan default	13.3%	42.8%	34%
	Strongly Agree	Count	4	10	14
		% within Believe loan default	26.8%	28.6%	28%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 9.34 Pr = 0.014

The P Value of the result is .014 which is less than the minimum standard for P value=0.05. Thus the relationship between financing of a project by relocating second hand machineries from abroad and loan default is strong. From this we can understand that the probability of defaulters and successful projects in this observed population that DBE's financing of second hand machinery's by relocating from abroad has contribution for increment of project default. This implies that financing of a project with second hand machinery's as equity by relocating from abroad have more probability of being default. Factors in connection with relocating of second hand machineries are well evaluated and checked at the origin and destination countries in question. Which means no one is sure and responsible about the

valuation and checking of machinery's before installation and release of their respective working capital. Thus, one of the biggest failures of the bank so far was relocating second hand machinery's from abroad without proper valuation and inspection. Moreover, those machinery's are outdated technologically and the product of same is not competitive in the market too and conclude to say have great contribution for default.

4.3.4. Impact of exceptional and deviational approval

Table 4.6 below summarizes the impact of DBE's exceptional and deviational approval of loan for default from the credit expert's perception point. The result indicated that from the observed population 20% of them strongly agree and 56% of the population sampled agree. Thus, DBE's exceptional and deviational approval of loan has its own contribution for the failure of project or loan default.

Table 4.6. Relationship with exceptional and deviational approval of loan

			Believe loan default		Total
			No	Yes	
DBE's exceptional and deviational approval of loan have it's own impact for the failure of project	Strongly Disagree	Count	1	0	1
		% within Believe loan default	6.7%	0.0%	2%
	Disagree	Count	2	4	6
		% within Believe loan default	13.3%	11.4%	12%
	Neutral	Count	3	2	5
		% within Believe loan default	20%	5.7%	10%
	Agree	Count	6	22	28
		% within Believe loan default	40%	62.9%	56%
	Strongly Agree	Count	3	7	10
		% within Believe loan default	20%	20%	20%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 12.572 Pr = 0.024

The P Value of the result is .024 which is less than the minimum standard for P value=0.05. Thus the relationship between exceptional and deviational approval of loan and NPL is strong. From this we can understand that the probability of defaulters and successful projects in this observed population that DBE's exceptional and deviational approval of loan have it's own contribution for the failure of project or default. This implies that financing of a project with exceptional and deviational approvals of loan have more probability of being default.

4.3.5. Impact of uniform interest rate application for all sectors

Table 4.7 below summarizes DBE's uniform interest rate application for all sectors contribution for the increment of nonperforming loan from the credit expert's perception. The result indicated that from the observed population 34% of them have agreed for the increment of default while,28% of the population sampled strongly agree, DBE's uniform interest rate application for all sectors is adequately contributes the increment of nonperforming loan. Thus, application of uniform interest rate has contribution for loan default.

Table 4.7. Relationship with uniform interest rate application for all sectors

			Believe loan default		Total
			No	Yes	
DBE's uniform interest rate application for all sectors is adequately contributes the increment of nonperforming loan	Strongly Disagree	Count	5	3	8
		% within Believe loan default	33.3%	8.6%	2%
	Disagree	Count	2	4	6
		% within Believe loan default	13.3%	11.4%	12%
	Neutral	Count	3	2	5
		% within Believe loan default	20%	5.7%	10%
	Agree	Count	2	15	17
		% within Believe loan default	13.3%	42.8%	34%
	Strongly Agree	Count	3	11	14
		% within Believe loan default	20%	31.5%	28%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 11.88 Pr = 0.044

The P Value of the result is 0.044 which is still less than the minimum standard for P value=0.05. Thus the relationship between uniform interest rate applications for all sectors has adequately contributes the increment of nonperforming loan and loan default has relatively somehow. From this we can understand that the probability of defaulters and

successful projects in this observed population that DBE's uniform interest rate application for all sectors is adequately contributes the increment of nonperforming are indifferent.

4.3.6. Financing rain feed agriculture contribution for non-performing loan

Table 4.8 below summarizes DBE's financing policy of rain feed agriculture brought the increment contribution of non-performing loan. The result indicated that from the observed population 22% of them have agreed for DBE's financing policy of rain feed agriculture brought the increment contribution of non-performing loan while,38% of the population sampled agreed that DBE's financing policy of rain feed agriculture will not brought the increment of non-performing. Thus, it is possible to conclude that DBE's financing policy of rain feed agriculture projects do not have significant contribution for loan default.

Table 4.8. Relationship with financing rain feed agriculture

			Believe loan default		Total
			No	Yes	
DBE's financing policy of rain feed agriculture brought the increment contribution of non-performing loan	Strongly Disagree	Count	2	5	7
		% within Believe loan default	13.3%	14.3%	14%
	Disagree	Count	4	15	19
		% within Believe loan default	26.7%	30%	38%
	Neutral	Count	3	3	6
		% within Believe loan default	20.0%	8.6%	12%
	Agree	Count	3	8	11
		% within Believe loan default	20.0%	22.9%	22%
	Strongly Agree	Count	3	4	7
		% within Believe loan default	20.0%	11.4%	14%
		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 5.488 Pr = 0.241

The P Value of the result is .241 which is higher than the minimum standard for P value=0.05. Thus the relationship between financing of rain feed agriculture projects and loan

default has no relationship. From this we can conclude that the probability of defaulters and successful projects in this observed population that DBE's financing policy of rain feed agriculture projects by itself may not contributes the default rate of the bank.

4.3.7. commodities nature attributes

Table 4.9 shows the relationship between the commodities nature attributes and loan default. It is found that about 60 percent of the respondent agreed that commodities nature attributes have great contribution for non performing in project finance at DBE while 26 percent of the respondents strongly agreed that commodity nature attributes contributes for loan default from credit experts point of view. Thus, it is possible to conclude that DBE's commodities nature attributes have significant contribution for loan default.

Table 4.9. Relationship with commodity nature attributes

			Believe loan default		Total
			No	Yes	
Some commodities like textile and garment, leather and tannery have great contribution for non performing performance in project finance at DBE	Disagree	Count	1	1	2
		% within Believe loan default	6.7%	2.8%	4%
	Neutral	Count	2	3	5
		% within Believe loan default	13.3%	8.6%	10%
	Agree	Count	4	26	30
		% within Believe loan default	26.7%	74.3%	60%
	Strongly Agree	Count	8	5	13
		% within Believe loan default	53.3%	14.3%	26%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 8.429 Pr = 0.038

The P Value of the result is 0.038 which is less than the minimum P value=0.05 thus have strong relationship between the commodity nature attributes and loan default rate. Likewise the result shows that 60 percent of the respondents agreed that commodity nature attributes brought loan default. This implies that the commodity nature attributes increases the probability of loan default performance also increases.

4.3.8. DBE's participation on the risky venture project finance

Table 4.10 shows the relationship between the DBE is operating on the risk venture activity of project finance and loan default rate from the perception of credit experts. The study result shows that about 42 percent of the respondents agreed that DBE's operating on the risk venture activity of project finance exposed for the loan default rate while,40 percent of the respondents agreed that though DBE's operating on the risk venture activities of project finance may not exposed to loan default rate.

Table 4.10. Relationship with risk venture operation

			Believe loan default		Total
			No	Yes	
DBE is operating on the risk venture activity of project finance contributes for loan default.	Disagree	Count	5	15	20
		% within Believe loan default	33.3%	42.9%	40%
	Neutral	Count	3	3	6
		% within Believe loan default	20%	8.6%	12%
	Agree	Count	6	15	21
		% within Believe loan default	40%	42.8%	42%
	Strongly Agree	Count	1	2	3
		% within Believe loan default	6.7%	5.7%	6%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 7.557 Pr = 0.056

The P Value of the result is 0.056 which is greater than the minimum P value=0.05. Thus, the relationship between the status DBE's operating on the risk venture activity of project finance and loan default rate is not significant. From this we can infer that DBE's operation on risky venture activities of project finance may not contributes for increment of loan default.

4.3.9. Impact of equity contribution the promoter from the total investment cost

Table 4.11 below summarizes DBE's previous 30 percent equity contribution of the promoter from the total investment cost for realization of project objective from the credit expert's perception point of view. The result indicated that from the observed population 34% of them have agreed DBE's previous 30 percent equity contribution of the promoter has contributed for the increment of loan default while,52% of the population sampled agreed that DBE's previous 30 percent equity contribution of the promoter has not contributed for the increment of loan default. Thus, it is possible to conclude that DBE's previous 30 percent equity contribution of the promoter has not contributed for the increment of loan default.

Table 4.11. Relationship with promoter's equity contribution

			Believe loan default		
			No	Yes	Total
DBE's previous equity contribution of 30% of the total investment cost has contribution for increment of non-performing loans	Disagree	Count	6	20	26
		% within Believe loan default	40%	57.1%	52%
	Neutral	Count	1	1	2
		% within Believe loan default	6.6%	2.9%	4%
	Agree	Count	4	13	17
		% within Believe loan default	26.7%	37.1%	34%
	Strongly Agree	Count	4	1	5
		% within Believe loan default	26.7%	2.9%	26%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 3.429 Pr = 0.330

The P Value of the result is .330 which is greater than the minimum standard for P value=0.05. Thus, the relationships between DBE's previous equity contributions of 30% of the total investment cost of any project and the level of default is not significant. From this we can understand that the probability of defaulters and successful projects in this observed population that DBE's previous equity contribution of 30% of the total investment cost of any

project have positive impact on the realization of the project but level of default and equity contribution is unrelated from the credit expert's perception point of view.

4.3.10. Impact project appraisal and evaluation parameters

Table 4.12 shows the relationship between DBE's project appraisal and evaluation parameters and loan default rate. It is found that about 60 percent of the respondent agreed on DBE's project appraisal and evaluation parameters are not in a very genuine and good manner to provide achievement of project realization and thus leads to increase the default rate of the bank while, 14 percent of the respondents disagree on DBE's project appraisal and evaluation parameters are not in a very genuine and good manner to provide achievement of project realization. Thus, it is possible to wind up that DBE's project appraisal and evaluation parameters have contributed for the increment of loan default.

Table 4.12. Relationship with project appraisal and evaluation parameters

			Believe loan default		Total
			No	Yes	
DBE's project appraisal and evaluation parameters are not in a very genuine and good manner to provide achievement of project realization	Strongly Disagree	Count	1	0	1
		% within Believe loan default	6.7%	0.0%	2%
	Disagree	Count	2	5	7
		% within Believe loan default	13.3 %	14.3%	14%
	Neutral	Count	3	3	6
		% within Believe loan default	20.0%	8.6%	12%
	Agree	Count	7	23	30
		% within Believe loan default	46.7%	65.7%	60%
	Strongly Agree	Count	2	4	6
		% within Believe loan default	13.3%	11.4%	12%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 16.94 Pr = 0.0047

The P Value of the result is 0.0047 which is less than the minimum P value=0.05. Thus, the relationship between the project appraisal and evaluation parameters and loan default rate is significant. From this we can appreciate that the probability of defaulters and successful projects in this observed population that DBE's project appraisal and evaluation parameters have contributed for increment of loan default.

4.3.11. Assumption of financial projection for viability checking

Table 4.13 shows the relationship between the assumption of financial projection for viability checking and loan default rate. The study result shows that about 64 percent of the respondents have agreed DBE's financial projection assumption is exaggerated, while 16 percent of the respondents disagreed that DBE's financial projection assumption is exaggerated. From this, we can infer that DBE's financial projection assumption has contributed for loan default.

Table 4.13. Relationship with assumption of financial projection

			Believe loan default		Total
			No	Yes	
DBE's financial projection of financial statements are exaggerated	Strongly Disagree	Count	2	1	3
		% within Believe loan default	13.3%	2.8%	6%
	Disagree	Count	3	5	8
		% within Believe loan default	20%	14.3%	16%
	Neutral	Count	1	3	4
		% within Believe loan default	6.7%	8.6%	8%
	Agree	Count	8	24	32
		% within Believe loan default	53.3%	68.6%	64%
	Strongly Agree	Count	1	2	3
		% within Believe loan default	6.7%	5.7%	6%
Total		Count	15	35	50
		% within Believe loan default	100.0%	100.0%	100.0%

Pearson chi-Square = 10.68 Pr = 0.034

The P Value of the result is 0.034 which is greater than the minimum P value=0.05. Thus, the relationship between assumption of financial projection and loan default is significant. From this, we can infer that DBE's financial projection assumption has contributed for loan default.

4.4. Correlation Analysis between Independent Variables

In this section the correlation between the loan default and explanatory variables is discussed. A correlation matrix used to ensure the correlation among the explanatory variables. Cooper and Schindler (2009) suggested that a correlation coefficient above 0.8 between explanatory as a sign of multicolinearity problem. Malhotra, (2007) argued that the correlation coefficient can be used 0.75. The result of correlation analysis shows that all the independent variables used in the empirical analysis, have correlation coefficient of less than 0.75. This indicates that the researcher can use all of the variables (5 variables). A correlation coefficient is a statistical measure of the degree to which changes to the value of one of explanatory variable predict change to the value of another explanatory variable.

Table 4.14. Correlations

CORRELATIONS						
		Project follow up attributes	Policy induced attributes	Commodity Nature attributes	Source of Equity contribution	Credit evaluation Criteria
Project follow up attributes	Pearson Correlation	1	.280**	.375**	.202*	.495**
	Sig. (2-tailed)		.000	.002	.000	.003
	N	50	50	50	50	50
Policy induced attributes	Pearson Correlation	.280**	1	.380**	.279**	.374**
	Sig. (2-tailed)	.000		.000	.002	.000
	N	50	50	50	50	50
Commodity Nature attributes	Pearson Correlation	.375**	.380**	1	.203*	.265**
	Sig. (2-tailed)	.002	.000		.025	.003
	N	50	50	50	50	50
Source of Equity contribution	Pearson Correlation	.202*	.279**	.203*	1	.391**
	Sig. (2-tailed)	.000	.002	.025		.000
	N	50	50	50	50	50
Credit evaluation Criteria	Pearson Correlation	.495**	.374**	.265**	.391**	1
	Sig. (2-tailed)	.003	.000	.003	.000	
	N	50	50	50	50	50
	**. Correlation is significant at the 0.01 level (2-tailed).					
	*. Correlation is significant at the 0.05 level (2-tailed).					

From the above table loan default had most significant correlation with project follow up attributes, followed by credit evaluation. Secondly, policy induced attributes also have significant correlation with loan default. Moreover commodity nature attributes and source of equity contribution had relative significant correlation to loan default.

4.4.3. Project Follow up Attributes

Table 4.14 specifies that the Project follow up attributes had strong positive linear relationship with policy induced attributes, source of equity contribution, credit evaluation criteria and commodity nature attributes. The relationship between the policy induced attributes with the stated independent variable had 28, 37 20 and 49 percent positive liner relationship. The result shows that the better the Project follow up attributes the better the level of the default rate of the institution.

4.4.4. Policy Induced Attributes

Table 4.14 specifies that the policy induced attributes had strong positive linear relationship with Project follow up attributes, source of equity contribution, credit evaluation criteria and commodity nature attributes. The relationship between the policy induced attributes with the stated independent variable had 28, 38, 27 and 37 percent positive liner relationship. The result shows that the better the policy induced attributes the better the level of the default rate of the institution.

4.4.5. Commodity Nature Attributes

Table 4.14 specifies that the commodity nature attributes had strong positive linear relationship with Project follow up attributes, policy induced attributes, credit evaluation criteria and source of equity contribution. The relationship between the sources of equity contribution with the stated independent variable had 37, 38, 20 and 26 percent positive liner relationship. The result shows that those customers who didn’t contribute the equity contribution had a high probability to loan default. This indicates that as the better the low level of the equity contribution during project implementation, high level of the default rate.

4.4.6. Source of Equity Contribution

Table 4.14 specifies that the source of equity contribution had strong positive linear relationship with Project follow up attributes, policy induced attributes, credit evaluation criteria and commodity nature attributes. The relationship between the sources of equity contribution with the stated independent variable had 20, 27, 20 and 39 percent positive liner relationship. The result shows that those customers who didn't contribute the equity contribution had a high probability to loan default. This indicates that as the better the low level of the equity contribution during project implementation, high level of the default rate.

4.4.7. Credit Evaluation Criteria

Table 4.14 specifies that the credit evaluation criteria had strong positive linear relationship with Project follow up attribute, policy induced attributes, source of equity contribution and commodity nature attributes. The relationship between the credit evaluation criteria with the stated independent variable had 49, 37, 26 and 39 percent positive liner relationship. The result shows that weak credit evaluation criteria increase project loan default. This indicates that as the better the level of the credit evaluation parameters used during project appraisal, the better will be the level of the default rate

4.5. Determinants of loan default in project financing

As discussed in chapter 3, the probit econometric model was selected for analyzing the determinant of loan default 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. To determine the independent variables that are good predictors of the loan default from the credit officers point of view, the probit regression model was estimated using the Maximum Likelihood Estimation Method. The results of the analysis are presented in the table below.

Table 4.15 - Probit regression

Dependent Variable: Q6

Method: ML - Binary Probit

Sample: 50

Included observations: 50

Convergence achieved after 4 iterations

Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.889606	1.333012	-1.417546	0.1563
CEC	0.903521	0.284585	3.877647	0.0001
PFA	0.565543	0.297454	1.901275	0.0256
CNA	0.057439	0.234426	0.245019	0.8064
PIA	0.834556	0.345775	2.413576	0.0072
SEC	-0.566441	0.308611	-1.835455	0.0664

The fitted regression model is

NPL = -1.89 + 0.56 PFA+0.83 PIA + 0.057 CNA -0.57 SEC +0.90 CEC

Coef/st.err=z

Pro.= p value= significance=

-ve = indirect relationship

+ve= Direct relationship

Where

NPL = Non Performing Loan as dependent variable.

PFA= Project Follow up Attributes that leads to loan NPL

PIA=Policy Induced Attributes that leads to NPL

CNA=Commodity nature Attributes that brought NPL

SEC=Source of Equity Contribution that leads to NPL

CEC=Credit Evaluation Criteria during project Appraisal that leads to NPL.

4.5.1. Interpretations of Explanatory Variables

Here we have to be cautious while interpreting, we cannot interpret the coefficients from the outputs of probit regression model, and we need to interpret the marginal effects of the regression. That means by how much the probability of dummy dependent variable changes for a change in the values of explanatory variables.

4.5.1.1. Project Follow Up Attributes (PFA)

From the regression, analysis result Project follow up attributes had significant contribution for NPL at 5% level of significance; this indicates that as the better Project follow up attributes at DBE, there would be a better level of NPL. To bring it to banking or finance perspective, a change/movement/ in Project Follow up Attributes (from one point of scale to the other in the five scale likert i.e. agree to strongly disagree or neutral to agree and the like) increase the probability of projects financed being NPL by 56%.

4.5.1.2. Policy Induced Attributes (P LA)

From the regression analysis result policy induced attributes had significant contribution for NPL next to credit evaluation criteria by 5% level of significance; this indicates that as the better policy induced attributes at DBE, there would be a better NPL. To bring it to banking

or finance perspective, a change/movement in Policy Induced Attributes (from one point of scale to the other in the five scale likert i.e. agree to strongly disagree or neutral to agree and the like) increase the probability of projects financed being NPL by 83%.

4.5.1.3. Credit Evaluation Criteria (CEC)

From the regression result credit evaluation criteria had highly significant contribution for loan default since the p-value for is 0.0001 which is less than the least significant level of 5%. This indicates that as the better the level of the credit evaluation parameters used during project appraisal, the better will be the level of NPL. To bring it to banking or finance perspective, a change /movement/ in Credit Evaluation Criteria (from one point of scale to the other in the five scale likert i.e. agree to strongly disagree or neutral to agree and the like) increase the probability of projects financed being NPL by 90%,.

4.5.1.4. Source of Equity Contribution (SEC)

From the regression analysis result as source of equity, contribution had no significant contribution for NPL, since the P-Value is 0.066, which is greater than the significance level of 5%.

4.5.1.5. Commodity Nature Attributes (CNA)

As we see from the table above, the probit regression analysis result commodity nature attributes had no significant contribution for NPL, since the P-Value is 0.8064, which is greater than the significance level of 5%.

4.6. Summary of Results and Discussion

The data gathering instruments used was questioner survey. The questionnaire is distributed to all of 54 credit performers of DBE, but only 50 have completed and returned successfully. Hence around 92.6% of the distributed survey is collected.

In stratified sampling selection technique, the large portion of the populations are senior staffs of credit operation in project finance , i.e. 60% and 22% of the respondents are senior officers and team mangers (principal officers) respectively. Besides, all the credit performers

who involve in the project financing process, from the initial customer's loan application to final loan recovery measures in case of default, were included in the survey.

Most of the respondents have ample experience in the banking area as well as in the credit process. Moreover, they are well qualified. Hence, they have a better knowledge in project finance and their perception in credit financing is the main determinants of default.

The results obtained from the survey on; project follow up attributes, credit evaluation criteria and policy induced attributes as the main significant determinants of project default, while the commodity nature attributes and source of equity contribution as the insignificant determinant project default are summarized against the literatures and presented as follows. The additional information obtained from the open ended questioner study is also incorporated.

4.6.1. Discussion of the significant Explanatory Variables

Poor project follow up and monitoring contributes for increment of non-performing loans/project default (Rondinelli (1983). Such findings have also obtained supported by the survey result. In addition, the open ended questioner study result affirms such findings. Limitations in providing ample technical support for borrowers through its follow up, the follow up reports produced by credit experts of the Bank do not enables the Bank's top management pass informed decision, the bank do not avails ample budget for conducting quality follow up reports, moreover, project follow up format is not well developed, exhaustive and helpful in figuring out the prevailing problems encountering the project. This and other related factors leads the bank to experience incapability of appreciating the real problem the financed projects and finally, carry large portion of non-performing projects.

Weak credit appraisal assessment made by the Bank and lack of proper skills of the loan appraisers is found to be the cause of default, as per the study made by Patersson, (2004), and Waweru and Kalini, (2009). Such findings have also obtained supported by the survey result. In addition, the open ended questioner study result affirms such findings. Poor project appraisal and evaluation parameters, unrealistic project appraisal brings exaggerated and unrealistic financial projections and consequently leads to wrong financial decision and at last have a strong relationship with NPL. Additionally, poor prudent lending practices have a strong correlation with loan default.

The bank's policy which allows to establish projects by using relocating second hand machinery's from abroad, establishing mega commercial agriculture projects by using rain feed agriculture, establishing projects by using buy-out from other banks and establishing mega project by top management exceptional and deviational approval have strong correlation with loan default.

As per the SPSS output from probit model regression from the survey data factors in connection with relocating of second hand machineries are well evaluated and checked at the origin and destination countries in question. Which means no one is sure and responsible about the valuation and checking of machinery's before installation and release of their respective working capital. Thus, one of the biggest failures of the bank so far was relocating second hand machinery's from abroad without proper valuation and inspection. Moreover, those machinery's are outdated technologically and the product of same is not competitive in the market too and conclude to say have great contribution for default as policy induced attributes.

Additionally, according to the SPSS output from the survey data in connection with exceptional and deviational loan approval is believed by the respondents to be cause for loan default. Thus, exceptional and deviational loan approvals have great contribution for default. Additionally the DBE's financing policy of rain feed agriculture had brought the great contribution for non-performing loan.

There are empirical studies that assert factors in connection with credit policy and procedure as a cause of loan delinquency. (Gitamu, 2014, and Munen & Guyo, 2013). These findings have obtained strong support by the survey result. In addition, the open ended questioner result study has supported such findings. The bank's policy which allows to establish projects by using relocating second hand machinery's from abroad, establishing mega commercial agriculture projects by using rain feed agriculture, establishing projects by using buy-out from other banks and establishing mega project by top management exceptional and deviational approval have also strong correlation with loan default next to project evaluation criteria.

Finally, the overall survey result on such the study reveals that project follow up aspects, credit evaluation criteria during project appraisal and policy induced attributes have significant contribution for NPL from the credit experts perception point of view.

4.6.2. Discussion of the Insignificant Explanatory Variables

As per the SPSS probit regression model output from the survey data in connection with commodity nature attributes and source of equity contribution, have its own impact for increment of NPL, but the extent is insignificant contribution for loan default. However, no literature has obtained to support such finding.

From the survey analysis result, the source of equity contribution and commodity nature attributes had no significant contribution for loan default from the credit expert's perception point of view.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

This explanatory research is produced to assess major determinants of non-performing loans in DBE. Five explanatory variables namely, project follow up attributes, credit evaluation criteria for project appraisal study, policy induced attributes, and source of equity contribution and the nature of commodity attributes are considered to be major cause of NPL in DBE. To determine explanatory variables that are good predictors of the loan default from the credit officer's point of view, the probit regression model was estimated using the Maximum Likelihood Estimation Method.

Concerning respondent's profile, it is likely to suppose that respondents have ample experience in the banking area as well as in the credit process. Moreover, they are well qualified. Hence, they have a better knowledge in project finance.

The study assumed the expected sign of all of the explanatory variables to be positive (direct impact on dependent variable) while the study finding revealed that source of equity contribution to have negative (indirect impact on dependent variable).

The study used all of the five explanatory variables assumed to be predictors of NPL in DBE, since the correlation among the explanatory variables is found to be far below the standard (less than 0.75). From this it is also possible to deduce that there is no multicollinearity problem among the explanatory variables.

Regarding reliability/consistency of explanatory variables in measuring what it is intend to measure, cronbach alpha test is applied. The cronbach alpha coefficient for each of explanatory variables in particular and the overall attributes in general is found to be above 0.7. From this it is likely to infer that explanatory variables utilized in this study are consistent in measuring what it is intend to measure.

The study finding revealed that three explanatory variables (project follow up attributes, credit evaluation criteria for project appraisal study and policy induced attributes) had

significant contribution for loan default in DBE, while two explanatory variables (source of equity contribution and the nature of commodity attributes) had significant contribution for loan default in DBE. Based on this finding the researcher concluded that, the Bank's highest amount of non-performing loan or default rate was due to the Bank's poor project follow up, policy related variables and its weak credit evaluation criteria in identifying potential projects to be financed.

5.2. Recommendation

Aligned with the above findings and conclusions, the researcher proposes the following corrective measures that should be considered by the Bank's top management and other concerned stakeholders in order to reduce NPL ratio at the bank.

- Completing a project is not the same thing as ending the project management process. Simply finishing does not ensure that the organization benefits from the project's outcome. So how can the Bank properly measure a project's success, and work toward continuous improvement? The Bank has to put in place well-built follow up system. This means, where the process of Project follows up is helpful. It has to help the bank answer the following key questions:

- Did the project fully solve the problem that it was designed to address?
- Can we take things further, and deliver even bigger benefits?
- What lessons did we learn that we could apply to future projects?

A good time to start thinking about the Post Implementation Project follow up is when members of the project team remember the most – shortly after the project has been delivered, and when most of the problems have been ironed-out.

Here are some tips for the bank to follow while conducting the project follow up:

- **Ask for openness** – Emphasize the importance of being open and honest in your assessment, and make sure that people are not in any way punished for being open.
- **Be objective** – Describe what has happened in objective terms, and then focus on improvements.
- **Document success** – Document practices and procedures that led to project successes, and make recommendations for applying them to similar future projects.
- **Look with hindsight** – Pay attention to the unknowns (now known!) that may have increased implementation risks. Develop a way of looking out for these in future projects.
- **Be future-focused** – Remember, the purpose is to focus on the future, not to assign blame for what happened in the past. This is not the time to focus on any one person or team.

- **Look at both positives and negatives** – Identify positive as well as negative lessons.

When conducting the Project follow up, include the following activities:

- **Conduct a gap analysis.**
  - Project follows up the project template to evaluate how closely the project results match the original objectives.
  - Project follow up the expected deliverables (including documentation) and ensure either that these have been delivered to an acceptable level of quality, or that an acceptable substitute is in place.
  - If there are gaps, how will these be closed?
- **Determine whether the project goals were achieved.**
  - Is the deliverable functioning as expected?
  - Are errors rates low enough, and is it fit for purpose?
  - Is it functioning well, and in a way that will adjust smoothly to future operating demands?
  - Are the necessary controls and systems in place, and are they working properly?
  - What routine activities are needed to support the project's success?
  - If there are problems here, how will these be addressed?
  - How does the end result compare with the original project plan, in terms of quality, schedule and budget?
- **Determine the satisfaction of stakeholders.**
  - Were the end users' needs met?
  - What are the effects on the client or end user?
  - If key individuals aren't satisfied, how should this be addressed?
- **Determine the project's costs and benefits.**
  - What were the final costs?
  - What will it cost to operate the solution?
  - What will it cost to support the solution in the future?
  - How do the costs compare with the benefits achieved?
  - If the project hasn't delivered a sufficiently large return, how can this be improved?
- **Identify areas of further development.**
  - Have all of the expected benefits been achieved? If not, what is needed to achieve them?
  - Are there opportunities for further training and coaching that will maximize results?
  - Could you make further changes, which would deliver even more value?
  - Are there any other additional benefits that can be achieved?
- **Identify lessons learned.**
  - How well were the projects deliverables assessed, and how well were timescales and costs assessed?
  - What went wrong, why did these things go wrong, and how could these problems be avoided next time?
  - What went well, and needs to be learned from?

- **Report findings and recommendations.**
  - What have you learned from this Project follow up?
  - Do you need corrective activity to get the benefits you want?
  - What lessons have you learned that need to be carried forward to future projects?
  - Does this project naturally lead on to future projects, which will build on the success and benefits already achieved?

- For the Bank to ensure viability of the project financed & repayments of loans to avoid NPLs, the researcher recommends the Bank to customize the following internationally proven project evaluation and appraisal parameters, to the county's realistic situation;

Parameter # 1: Basic Appraisal Parameters

a.Technical

b. Financial

c. Commercial

d. Economic

e. Managerial

f. Organizational, etc.

Parameter # 2: General and Miscellaneous Appraisal Parameters:

Project Evaluation under Risk and Uncertainty

There may be following risks and uncertainties to the project:

(i) Time over-run due to various reasons beyond the control of project authorities

(ii) Cost overrun due to many reasons beyond the control of project authorities

(iii) Change in the demand of products/services proposed to be produced/generated from the project

(iv) Increase in the cost of production

(v) Change in the selling prices due to downward demand of product on account of arising of slackness in the market

(vi) Fund constraints leading to time overrun and cost overrun

(vii) Political risks

(viii) International risks due to problems in the countries of foreign contractors and suppliers to the project

(ix) Design or technological obsolescence

Parameter # 3: Project Appraisal under Normal, Inflationary, and Deflationary Conditions

Details about the project such as, capital cost estimates, profitability projection, selling price of its products, cost of production, etc., are compiled assuming the current conditions. However, these assumptions made during the normal conditions for the capital cost of project, selling prices, and cost of production etc., may change due to inflation or deflation during and also after the execution period of the project.

Thus, the projections made about the profitability indices may not hold good. Therefore, for the changes in the conditions and assumptions, a sensitivity analysis is made working out the revised indices for the evaluation of project.

Parameter # 4: Macro and Micro Parameters in Project Selection

While taking the investment decisions, not only the financial indices are considered but also the other important parameters are examined and evaluated very minutely. These parameters are: Evaluation of organizational, managerial strengths, sensitivity analysis, market demand and supply of products, technical evaluation, etc.

Thus, all important aspects are examined in detail and minutely, so as to leave no chance to

Parameter # 5: Market and Demand Analysis together with Analysis of Firm and Market Risk

This study is very important. Any error/omission in market demand and supply study would be very costly to the organization. This would affect very adversely the profitability position of the project. Similarly, the study and examination of probable market risks is also very important and the backbone of the investment decision making process.

Parameter # 6: Special Decision Situation

Sometimes, investment decision is taken on the basis of certain unique situations, not foreseen earlier. However, these become more important for implementation.

These special situations may be due to:

(i) Safety requirement

(ii) Pollution control action due to government's direction

(iii) Administrative requirements

(iv) Natural calamities and rehabilitation needed

(v) Major breakdown/accident resulting in reconstruction activities to be undertaken immediately.

Thus, these are the few special situations necessitating to take investment decisions for new projects.

Parameter # 7: Options and Flexibilities:

When investment proposals are examined, various alternatives and flexibilities are also kept under consideration, while taking the final decision. There may be various alternatives, with cost differentials, time differentials, with different advantages and disadvantages, etc. All these options are examined and reviewed to facilitate the appropriate investment decision.

Parameter # 8: Qualitative Analysis

Various parameters to be examined and evaluated involve quantitative as well as qualitative improvements. Quantitative improvements may be towards increase in the volume of production, increase in efficiency, reduction in operating costs, etc.

Whereas, qualitative improvements may result in improvement in quality of product or services benefiting the organization indirectly, improving the safety conditions, improving the working conditions, improving the customer's satisfaction, etc. Thus, all these aspects are reviewed and report given to the management for finalizing the investment decision.

Parameter # 9: Tax Burden and Appraisal of Project

Tax burden may be in the form of excise duty, customs duty, sales-tax, or value added tax entry tax, service tax, works contract tax and income tax.

Parameter # 10: International Project Appraisal

Foreign investors would also like to know about the following aspects:

(i) Political condition in the country, where project is being set up by foreign investors. Memorandum of Undertaking (MoU) and Memorandum of Agreement (MoA) with the State and Central Government.

(ii) Working conditions in the country, where project is being set up.

(iii) Availability of suitable labour and other categories of manpower required for the project during construction and after construction to operate the unit.

(iv) To ensure the repayment of loans together with the interest

(v) To ensure the continuous demand of the product either at home or abroad.

All these aspects are examined before the investment decisions are taken in respect of such projects.

- The credit policy and procedure of the Bank has to be revised in manner that put into consideration the realistic situation of national and international economic condition. To state the limitations of credit policy and procedure of the Bank:

1. Since the policies & procedures that enforce in the bank are outdated and do not consider the current situation, DBE should exert efforts to update & review the credit policies & procedures manual regularly at a reasonable period. Furthermore, the Bank should assign a concerned unit, whenever changes are needed to review the policy & forward to the Bank's management.

2. The loan repayment period should consider the nature and cash flow of the project instead of performing based on assumption and in terms of loans period.

3. The collaterals estimation should be revalued based on the credit policy of the Bank and the Bank should install check and balance control system when ever estimation of collaterals have been conducted.

4. The procedure manual should encompass a clear explanation of how the loan disbursement would be carried out whenever there are deviations & exceptions in the loan approval time. Moreover, the procedure manual should properly reveal the authorization limit whenever exceptions & deviations are being existed.

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APPENDIX –A

Addis Ababa University

College of Business and Economics

MBA Degree in Management

Questionnaire to know Determinants of Non Performing Loans in Development Bank of Ethiopia

Dear Respondents,

This questionnaire is prepared to collect data from Development Bank of Ethiopia (DBE) personnel to undertake thesis paper for partial fulfillment of MBA in Management on the title, ***Determinants of Non Performing Loans*** *in the Bank's daily operation and management decision. The information that you provide will be used only for the analysis of the study which I am conducting as partial fulfillment of the MBA degree in Management.*

I kindly request you to respond freely and honestly as your response has great value in assessing the current factors Influencing Non Performing Loans in the Bank's operation and management decision.

I assure you that all your responses will be kept strictly confidential and used only for academic purpose.

Thank you, for your cooperation and response in advance*.*

General Direction:

- *You are not required to write your name*
- *Please put (√) mark in the box that best describes your response*
- *Write your opinion on the blank space provided and for some items you can use*

  Other sheets of paper if the space provided is not sufficient.

PART-I: GENERAL INFORMATION OF RESPONDENTS

1. ***Age****: <20 □ 21-30 □ 31-40 □ 41-50 □ >50 □*

2. ***Gender:*** *Male □ Female □*

3. ***Educational level:*** *Diploma □ 1st Degree □ 2nd Degree □ PhD □*

4. Years of service in the bank:

1-5 □ 6-10 □ 11-15 □ 16-20 □ >20 □

5. Job position: *S/Branch Mgr./ Sr. Officer □*
Principal Officer □ Bureau/Office/Branch Mgr. □
Director/ District Mgr. □ V/President □

- ***Please specify your Job position if other: _____***
- ***Working unit of the respondent:_____***

PART-II: DETAIL INFORMATION ABOUT PROJECT FINACE SERVICE IN DBE

2.1. *Classify financed projects in DBE as NPL(Non Performing Loans) if do not met their debt obligation as per the contractual agreement and PL(Performing Loans) if met their debt obligation as per the contractual agreement.*

1. NPL □ 2. PL □

Sr. No.	***Description***	***Strongly agree (5)***	***Agree (4)***	***Neutral (3)***	***Disagree (2)***	***Strongly Disagree (1)***
	1. Regarding Project Follow up attributes					
1.1	*DBE's Poor project follow up and monitoring contributes for increment of non performing loans/project default*					
1.2	*DBE's project follow up format is not well developed, exhaustive and helpful in figuring out the prevailing problems encountering the project*					
1.3	*The follow up reports produced by the Bank do not enables the Bank's top management pass informed decision*					
1.4	*DBE do not avails ample budget for conducting*					

	follow up reports					
1.5	*DBE is not providing sufficient technical support for borrowers, through its follow up*					
	2. Regarding policy induced attributes					
2.1	*DBE's financing of second hand machinery has contribution for increment of Non performing loans /project default*					
2.2	*Relocating of second hand machineries are well evaluated and checked at the origin and destination countries*					
2.3	*DBE's previous project buy out policy have it's own contribution for the increment of nonperforming loan*					
2.4	*DBE's exceptional and deviational approval of loan have it's own impact for the failure of project implementation*					
2.5	*DBE's uniform interest rate application for all sectors is adequately contributes the increment of nonperforming loan*					
2.6	*DBE's financing policy of rain feed agriculture brought the increment contribution of non-performing loan*					
	3. Regarding Commodity nature attributes					
3.1	*Some commodities like textile and garment, leather and tannery have great contribution for non performing performance in project finance at DBE*					
3.2	*Risk appetite of some commodity is adequately projected by their mitigation mechanism in DBE*					
3.3	*DBE's operation on risky venture activity of project finance contributes for loan default*					
	4. Regarding Source of equity contribution					
4.1	*DBE's previous equity contribution of 30% of the total investment cost has contribution for increment of non performing loans*					
4.2	*The equity raised by the promoter is not from legitimate source(free from any money laundry)*					

4.3	*All borrowers of DBE do not raise and invest the 30% project cost equity contribution*					
4.4	*Those customers who don't raised the portion of equity has high chance of project failure at DBE*					
	5. Regarding Credit evaluation Criteria					
5.1	*DBE's project appraisal and evaluation parameters are not in a very genuine and good manner to provide achievement of project realization*					
5.2	*DBE's project appraisal bases are not on up-to-date and realistic facts and on commodity research data*					
5.3	*DBE 's commodity study data do not reflect the realistic fact of project implementation in project finance*					
5.4	*DBE's financial projections are exaggerated*					
5.5	*DBE's Management do not sufficiently supports the project evaluation criteria to be realistic and up-to-date*					
5.6	*There is no prudent lending practice in DBE*					

PART-IV: GENERAL COMMENTS ABOUT PROJECT FINANCE PRACTICE IN DBE.

1) Does DBE have a very clear project screening and selection system or mechanism?

1.1 If Yes, what is it?

……
……
……

1.2 If No, why?

……
……
……

2) How do you explain the source of equity contribution is free from money laundry and also do you believe that, the promoters of DBE actually raised the part of equity contribution on the project financing cost?

……..……
……..……
……..

3) Please state any opinion, suggestions or comments which you think are very essential in reducing non performing loans in DBE.

……..……
……..……
……..……
….……
……..

Thank You!!!