SAINT MARY UNIVERSITY COLLEGE
SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF FAILURE FOR PROJECTS FINANCED BY DEVELOPMENT BANK OF ETHIOPIA

By
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ADDIS ABABA ETHIOPIA

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of **_Wubshet Bekalu_**. 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.

Adamu Legesse   _____

Name   Signature

St. Mary's University College, Addis Ababa   **June, 2013**

ENDORSEMENT

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

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ABSTRACT

Projects play vital role in implementation of national policies and strategies. That is way World Bank defined project as building block of development. However, projects can fail because of uncertainty to the future. Therefore, studying of project failure gives opportunity for learning from previous mistakes and improve the decision making process. The concept here is to take advantage of the failure and turn the negative feeling around by analyzing what went wrong and correcting it for the future. Thus, this study identifies the major determinant for failure of DBE financed projects, measures their significance and proposes the remedy measures. The study considered 122 projects through stratified sampling method from projects financed in over the last five years and which are operational for at least one yea. and hence econometric regression method (logit model) employed for data analysis. The finding of this study portrayed that the statistical significance of some project specific explanatory variables, such as marketing problem and manpower recruitment variation in aggravating project failure, but project implementation time overrun to decrease project failure Moreover, DBE's project planning capacity and exchange rate change (proxied by investment cost overrun) are found statistically significant in increasing project failure from DBE's credit management and macroeconomic explanatory variables respectively. Among sociopolitical variables, population size and literacy level in which the projects are working are found to be statistically significant in decreasing project failure as both variables increasing.

ACKNOWLEDGMENTS

ACRONYMS

AERR - Economic Rate of Returns at Appraisal

CDFs - Cumulative distribution functions

CERR - Economic Rate of Returns at Completion ()

CSA - Central Statistic Agency

DBE - Development Bank of Ethiopia

EFDR – Ethiopian Federal Democratic Republic

ERR – Economic rate of return

GDP – Growth domestic product

IT – Information technology

LPM - Leaner Probability Model

LR - Likelihood ratio

MoFED - Ministry of Finance and Economic Development Official

NBE - National Bank of Ethiopia

NPLs - Non-Performing loans

OGC - Office of Government Commerce

OLS - Ordinary least squares

PLC - Private Limited Company

RFIP - Rural Financial Intermediation Program

SNNP - South Nation and Nationality People

UK – United Kingdom

UNIDO - United Nation Industry Development Organization

VIF - Variance Inflation factor

WLS - Weighted Least Square

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CHAPTER - I
INTRODUCTION

1.1. Background of the Study

Nations usually prepare the overall development policies and strategies for equitable distribution and allocation of resources, and sustainable economic growth. These policies and strategies give rise to the country's development programs. Development programs, in turn, consist essentially of inter-related series of development projects.

Ethiopia, as one of developing country, has designed and launched so many development projects that have been carried out through participation of both private investors and government development organizations in order to utilize scarce financial resources (mainly from foreign grant and loan, and domestic saving) optimally. For successful implementation of these projects, the government has organized many offices at Ministry and Agency levels. These offices have been providing technical assistance and arrangements for project finance with subsidized interest rate since project finances are much more risky than commercial loans.

In this regard, Development Bank of Ethiopia (DBE) is the main strategic governmental Bank for the last hundred years specialized in project financing. This strategic mission is the main reason to find DBE at the back of all most all big establishments in Ethiopia. DBE's project financing and management process commences from the appraisal stage and continues up to evaluation stage, though, project cycle typically includes identification, formulation, appraisal, implementation, monitoring and evaluation (Gittinger, 1982). 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 appraisal stage, eligibility of the promoter for 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 purposes and project are being implemented according to 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 purposes of the follow-up operations are to evaluate project performance with respect to project plan, to propose corrective measures whenever there is deviation from plan, to enhance collection, and provide feedback for future appraisal process.

Even though 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 customers frustration as the result of project failures. This study, therefore, concentrate on the determinants of project failure 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 mitigating measures to reduce project failure.

1.2. Statement of the Problem

Bank financed projects can fail due to the change in macro-economy variables, sociopolitical change and internal weakness of the project in addition to poor credit management system of the Banks according to theoretical literatures indicated. However, the significance of these explanatory variables is not studied in particular case of DBE and rarely to found similar research studies in the case of other Banks as reviewed in empirical literature.

The project failure attributed to whatever source, it will increase the sunk cost of the country since fixed investments of the projects are specific to intended purpose and difficult to liquidate or require high switching cost. Moreover, it depletes the fund available for loan that the Bank could finance other projects that may have significant importance for economic growth of the country.

According to the information obtained from DBE's Annual Performance Report of 2012, only 29% of the projects financed by DBE are categorized as successful while the remaining 71% are in the failure category. This figure simply shows that how the problem is serious and needs critical study. Moreover, it is common to see foreclosure advertisement of DBE on different mass media following the failure of projects to service their debts. This situation created a bad image on the public about DBE finance by misperceiving that credit management system of the Bank as the main cause for project failure.

Understanding the prevailing perception of the public and the seriousness of the problem, Development Bank of Ethiopia has set a vision for "100% success for all financed projects by 2020" (DBE's Corporate Scorecard, 2010). To achieve this very difficult vision when looked from the risky nature of project finance, profound study about determinant of project failure/success is required in order to design the appropriate strategy to achieve the vision. In this regard, no study has been conducted so far to identify the determinants of failures/successes for DBE financed projects except for some reasoning for non-performing loans (NPLs) accumulation.

1.3. Research Question

Considering the above problem statement, this study will focus on investigating major determinants of DBE financed project failures and support the Bank to meet its vision by addressing the following research questions.

- What are the major macroeconomic determinants of failure for DBE finance projects?
- What are the major sociopolitical determinants of failure for DBE finance projects?
- What are the major project specific determinants of failure for DBE finance projects?
- What are the major credit management determinants of failure for DBE finance projects?

1.4. Objective of the Study

1.4.1. General Objective

The general objective of this study is to investigate the major determinant for the failure of projects financed by DBE.

1.4.2. Specific Objectives

The study will have the following specific objectives.
- To measure the significance of the macroeconomic factors for failure of DBE financed projects
- To measure the significance of sociopolitical factors for failure of DBE financed projects
- To measure the significance of the project specific factors for failure of DBE financed projects
- To measure the significance of the Bank's credit management system for failure of DBE financed projects

1.5. Significance of the Study

Research studies regarding Bank financed projects failure/success in general are very difficult to found and particularly in DBE financed projects nothing is studied so far according to the knowledge of the researcher. This study, therefore, contributes 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 failure 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. Scope and Limitation of the Study

DBE's project financing scheme can be categorized broadly in to term loans, managed funds and rural financial intermediation program (RFIP). Term loans are credits financed through complete responsibility of the Bank whereas managed funds are loans channeled to targeted customers for pre-specified purpose on behalf of foreign fund granters. RFIP is also a type of managed fund financed for micro finance institutions in Ethiopia. This study, therefore, focuses on outstanding DBE term loans financed projects from all economic sectors since managed funds and RFIP have the interest of the fund granters.

In relation to tax imbedding allegation fear, some of the DBE customers are not willing to disclose their financial reports including product sales to the Bank. Reports from some of willing-full customers are also not reliable for the same reason. Thus, the research finding in regards to overestimation of project return and market problem can have limitation to depict the reality because of missed data and accuracy.

1.7. Organization of the Study

This study is organized under five chapters. The first chapter presents the introduction which includes the background, statement of the problem, objectives, significance, scope and limitation of the study. The second chapter provides the review of relevant literatures that are pertinent to the topic.

Chapter three explains about the research method is used, which includes the sources of data and method of data collection and analysis. Empirical results and their interpretation are delivered in fourth chapter. Finally, concluding remarks of the findings and their implications are presented in the fifth chapter.

CHAPTER - II
REVIEW OF RELATED LITERATURE

2.1. Theoretical Literature

Understanding the concept of projects and project financing are very important to appreciate the need for studying Bank financed projects failure/success. Unless we are conscious of the importance of projects, studying of their failure/success becomes meaningless. Therefore, studying of project failure gives opportunity for learning from previous mistakes and improve the decision making process. The concept here is to take advantage of the failure and turn the negative feeling around by analyzing what went wrong and correcting it for the future.

2.1.1. Project Definition and Concepts

Bierman and Smidth (1970) defined project as a capital investment to develop facilities to provide goods and services (Bierman and Smidth, 1970). Similarly, UNIDO Manual (1972) defined projects as an activity that involves the utilization of scarce or at least limited resources in the hope of obtaining return or some benefits over a long period. According to UNIDO manual (1972), projects have the following unique characteristics.

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

Projects are essential to achieve the development objectives of countries and are considered as "cutting edge of development" (Gittinger, 1984 pp 9). Rondinelli (1983 pp 4) similarly called projects as "building blocks of development", because they are powerful means to achieve the development objectives.

The policy framework defines the context for periodic development plans (short, medium and long terms plans) which then require specific instruments for implementation. Projects are the policy and plan instruments, a particular decision scheme meant to convert policies and plans into reality. Therefore, project formulation is an integral part of a more broadly focused and continuous process of development planning (Tsegabirhan, 2007)

According to Tsegabirhan (2007), projects are the smallest operational element prepared and implemented as a separate entity in a national plan or program. In general, thus, sound development plans require good and realistic projects for the latter are the concrete manifestation of the pan as noted above.

Projects in such context are the concrete manifestations of the development plans and programs in a specific place and time. One can think of projects as subunits and bricks of programs, which constitute a component of or the entire national plan. They can be implemented either by public organization or private establishment. According to Chandra (2002), projects are financed from two major sources – Equity and Debt. In project financing, the debt-equity-ratio is varying with the magnitude of flexibility, risk, income and tax generation capacity according to him.

2.1.2. Project Financing Definition and Concept

A major player in sponsoring infrastructure projects and providing financing in developing countries, the World Bank (2001 pp 3) defines project finance as the "use of non-recourse or limited-recourse financing." Further defining these two terms, "the financing of a project is said to be *non-recourse* when lenders are repaid only from the cash flow generated by the project or, in the event of complete failure, from the value of the project's assets. Lenders may also have *limited recourse* to the assets of a parent company sponsoring a project."

In building a more robust picture of project finance, it is helpful to articulate the full list of characteristics and to contrast project finance with corporate finance. Not every project financing will have every characteristic, but the following provides a preliminary list of common features of project finance according to Bodnar (1996).

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.

Costly: Raising capital through project finance is generally more costly than typical corporate finance avenues. The greater need for information, monitoring and contractual agreements increases the transaction costs. Furthermore, the specific nature of the financial structures also entails higher costs and can reduce the liquidity of the project's debt. Margins for project financings also often include premiums for country and political risks since so many of the projects are in relatively high risk countries.

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).

2.1.3. Definition and Concept of Project Failure

There is no commonly accepted definition for project failure. 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 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, highly required from the point of overall contribution to the national economic growth.

2.1.4. Cause of Project Failure

Scholars dwelling on project in general identified various causes for project failure. In 2005, the Office of Government Commerce (OGC), part of the Efficiency and Reform Group within the Cabinet Office in England, identified the following eight common management causes which lead to project failure.

- Clear linkage problems between the project and the organization's strategic priorities;
- Absence of clear demarcation among senior management, ownership and leadership;
- Unclear and ineffective engagement among stakeholders;
- Skills and knowledge gap about project and risk management;
- Too little attention to breaking development and implementation into manageable steps;
- Appraisal of project proposals using current price rather than long-term money value;
- Low understanding and weak relation with the supply industry; and
- Lack of effective project team integration.

In other instances, McConnell (2010) identified the following top five market causes of project failure by considering IT projects as case study.

- **Not Involving Customers:** This is the primary reason for project failure according to McConnell. When you do a project and the customer does not participate in it, the project is doomed to fail.

Without user involvement you cannot feel committed to the product, your team becomes "hostile" to project expectations, and the development process turns into a blindly managed process when user or market requirements are not met.

- **Unknowledgeable Requirements Set**: 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**: 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:** 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 failure, so your primary task is to create a document flow for change requests and implement a system to exchange and process change requests.

- **Lack of Continuous Testing**: Usually lack of testers and their poor skills and knowledge will make a project unacceptable because acceptance tests to see whether the product meets the business requirements are not run. Poor testing may be caused by poor requirements set, lack of change control, inadequately trained staff, lack of time for performing testing.

Mind Tools web site explained the above reasons for projects failure in more summarized way in the document "Why Do Projects Fail?" as presented below.

- **Addressing of wrong business requirements:** If your project does not deliver what the organization really needs, this will inevitably negatively affect how it is perceived. This is why, conducting a thorough business requirements analysis is very important.

- **Poor Implementation:** Being competent only is not enough for good implementation. You need to manage risks issues and scope, the team and communication with stakeholders. Poor implementation can be caused by incapability to control everything under your control.

- **Poor governance:** The project promoters usually supported by the project's governance bodies. They provide direction, guidance, and critical review of the project progress. These governance bodies can also support by providing contacts and insights that help you get things done. If the project promoter lacks passion for the project or does not like to say no to these bodies trying to expand the project scope, the project may face difficulty.

- **Losing focus on the project's benefits:** Projects will have a list of benefits to be delivered and these benefits are expected to be clear, concise, and quantified. But, sometimes project team focuses on detailed planning, building a new system, developing training packs, and mapping out new processes that does not provide the necessary benefits.

- **The environment changes:** In dynamic world business case can become outdated before project implementation actually completed. In such situation, reviewing original requirements and goals partway is required to decide how to proceed. This may result with changing the scope of your project or even canceling the project.

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

a. Accumulation of interest expense attributed by implementation delay;
b. Technical problems;
c. Losses because of uninsured items damage;
d. Losing of market competitive position;
e. Expropriation;
f. Weak management;
g. Cost overrun because of inflation;
h. Government intervention;
i. Contractor failure;
j. Price increase or insufficient raw materials;
k. Technology obsolescence;
l. Over appraisals of collateral;
m. Financial insolvency of the promoter.

In more organized manner, Yescombe (2002) divided risks/cause of failure for Bank financed projects into tree main categories.

- Commercial causes – those inherent in the project itself or the market it operates in,
- Macro-economic causes – financial/economic causes that are out of the control of the project,
- Political causes – causes related to the government actions or political force.

Further he elaborated these three categories by subdividing into smaller components of risk as shown in the following table.

Table 2.1: Yescombe's risk matrix with sub-components

Major Components	Sub components
Commercial Risks	• Commercial viability • Completion risks • Environmental risks • Operational risk • Revenue risks • Input supply risk • Force majeure risk
Macro-economical Risks	• Inflation • Interest rate change • Exchange rate change
Political Risk	• Investment risk • Change of law risk • Quasi-political risk

Source: Yescombe 2002

According to him, "commercial risk" captures the risks that are associated with in the different project cycle: implementation and operation. During the implementation phase the contractor can bankrupt and the project implementation can be delayed, which will increase the costs and postpone the revenue stream. The operation phase contains risk such as management incompetency to run the operation, technological failure or obsolescence, input shortage and revenue decrease.

The input shortage can happen because of price increase and low supply of the raw materials (quantity). This again leads to production decrease and a higher price of the product, which in return decreases the expected revenue. Revenue decrease can occurs as a result of a decrease in products quantity, demand decline and lack of raw materials. Price can also decline as a result of competitors price cutting, government imposing of price controls, tariffs or royalties.

Yescombe (2002) has also classified financial risks such as change in inflation; interest rate and exchange rate that have not been accounted properly in the project formulation can hamper the viability of the project.

Investment risk considered under political component includes expropriation of the investment by the government and war or internal and external conflicts, which makes the project unable to function properly or entirely halt. The second political risk component, "change of law", include factors like price controls, withdrawal of permits, licenses or concessions, deregulation of the market introducing new competitors, increases in tax, tariffs, import duties or controls. Yescombe's (2002) last political component, quasi-political risk, includes interfering of lower levels of officials in the projects and government not honoring their obligations or the legal system not being objective. These all different risks discussed above can cause a project failure.

The causes of failure in all studies more or less have similarity except the existence of variation in dimension. When Yescombe's (2002) summarizes the main Bank financed project risks/cause of project failure in to three categories, he transferred the project risk/cause of project failure emanate from credit management of the financers to others components. Therefore, cause of project failure, according to the above review, can be summarized in to four categories according to the researcher of this study. These are:

Project Specific
- Poor implementation/Time overrun;
- Management problem;
- Poor governance;
- Cost overrun;
- Size of the project;
- Technical failure;
- Market and marketing problem;
- Quality of manpower;
- Missing of objective
- Missing stockholders requirement;
- Losses because of uninsured items damage;
- Financial insolvency of the promoter
- Absence of change control system

Credit Management
- Over appraisals of collateral;
- Project planning capacities of the financers;
- Follow-up level/providing technical advice;
- Over estimation of returns from the project;
- Appraisal of project proposals using current price rather than long-term money value;

Macro Environment
- Change in economic policies;
- The mismatch and change in exchange rate;
- Increases in energy prices,
- Economic growth,
- Inflation rate,

Sociopolitical Environment

- Demographic variables;
- Literacy level;
- Religion diversity.
- Jurisdiction system;
- Political system;
- Government officials perception for the projects;
- The government change and the politicization of projects;
- The problem of corruption and related cases;

All of the causes summarized above all expected to be the cause in DBE financed projects, and the major and measurable ones are going to be tested their significances in this study.

2.2. Empirical Results and Facts

So far, the researcher found one relevant article worked by Mubila et.al (2002) on African Development Bank. Due to the shortage of research studies on causes of Bank financed project failures, the researcher is compelled to consider similar studies conducted on different projects assuming that causes for project failure could be closely related. With this understanding, the project failure surveys on IT projects done by two organizations [The Bull Survey (1998) and The Chaos Report (1995)] were reviewed.

The Bull Survey (1998)

In 1998, the French computer manufacturer and systems integrator, Bull, requested an independent research company, Spikes Cavell, to conduct a survey in the UK to identify the major causes of IT project failure in the finance sector. The survey carried out on IT projects were identified missed deadlines (75%), exceeded budget (55%) and inability to meet project requirements (37%) as cause of project failure. The key findings of the survey reveals that the major causes of project failure during the lifecycle of the project are a breakdown in communications (57%), a lack of planning (39%) and poor quality control (35%).

The Chaos Report (1995)

The scope and approach of this landmark survey had been conducted among 365 IT managers from companies of various sizes and in various economic sectors. The p**roject evaluation criteria** had considered cost overruns, time overruns and content deficiencies.

The key findings of the opinion survey indicated that incomplete requirements 13.1%, lack of user involvement 12.4%, lack of resources 10.6%, unrealistic expectations 9.9%, lack of executive support 9.3%, changing requirements & specifications 8.7%, lack of planning 8.1%, didn't need it any longer 7.5%, lack of IT management 6.2%, technology illiteracy 4.3% and other 9.9% were the project impair factor.

Mubila and et.al (2000)

Mubila et.al (2000) had worked more or less the same study on African Development Bank. They used project size, implementation delay, investment cost overrun, economic rate of return of the project and human development index as measure project specific success or failure determinant in their study. In this model, they have used project specific explanatory variables such as total project cost (to proxy project size), cost overrun in percent, time overrun in percent and dummies for economic sector.

Moreover, they considered macroeconomic performance of the country, such as increases in energy prices, GDP, inflation rate, and domestic and regional politics as important influencing determinant in the study. Variables to capture the domestic economic environment – the average growth rate of the economy, the size of the population as well as dummies for regional distribution of customers included for the implementation period 1974 to 1994 to find if these variables have any relation to project success.

The result of their analysis regarding project internal cause have shown that large projects are less likely to fail, and cost and time overruns had negative impacts on project success. As far as sectoral factor, projects in agriculture, industry and transport sector have a higher probability for success, where as those in the social sector shown a probability of failure.

The coefficient of projects success in regarding to the regions, all regions except North Africa zone had a negative coefficient and indicated that there was a relatively higher probability for project success in the Northern Region. Moreover, they justified that the positive changes in GDP in the host country to have positive impact in project success. The same is also true for population size. The simple ordinary least squares (OLS) estimation also resulted with a negative coefficient for the intercept and a positive one for economic rate of returns at appraisal (AERR) - depicting that economic rate of returns at completion (CERR) are, on average, lower than AERRs and the economic rate of return at completion is strongly correlated to that at appraisal.

Moreover, the regression result by including cost and time overruns as explanatory variables of the level of the economic rate of return at completion resulted little correlation between the economic rate of return at completion and the cost and time overruns. The researchers further extended the model to consider economic sectoral difference in project performance and the parameter estimation for the sectoral dummy depicted not significant.

To conclude the empirical evidences, except the study worked on African development Bank by Mubila et.al (2000), the data collection and analysis method used in others studies is survey methods and descriptive statistics respectively, which are appropriate for qualitative data collection and analysis. In statistical analysis of project success determinant, Mubila et.al applied the OLS Regression Model to correlate economic rates of return at appraisal (AERR) with economic rates of return at completion (CERR) in a scatter diagram since they considered projects completed the project cycle for their study. To determine the significance of each factor for the probability of success or failure of projects financed by Africa Development Bank, they applied probit model using direct and proxy data to measure the determinant.

The area of Bank financed project failure in general is not a focus area of research as it is shown in empirical literature review and it is difficult to found any research work in case of Development Bank of Ethiopia in particular as par as the knowledge of this researcher. Even though, the unique nature of projects requires studying of project failure determinant in relation to credit processing system of DBE, project specific, macroeconomic, and sociopolitical context of Ethiopia.

The related studies executed by Mubila et.al on Development Bank of Africa even is not exhaustive in including explanatory variables for project failure. It completely lacks the explanatory variables from the credit processing system of the Bank because of data problem. Moreover, the observation considered for their study are weak to explain the current causes of project failure, because they considered only projects that are already phase out for their data source.

This study, therefore, will fills the research study gap in area of cause for Bank financed project failure in general and serves as initial study for DBE in particular. In contrary to Mubila et.al. study, this study has focused on operational projects in order to emphasize about the current determinant of projects failure. Moreover, in this study many new explanatory variables are added based on their relevance.

CHAPTER - III
RESEARCH METHOD AND DESIGN

3.1. Stylized Facts

DBE is the only specialized project financing bank in Ethiopia and provides medium and long term loans. The repayment periods for such loans can extend up to twenty years depending on the nature of the projects. DBE's loans are highly leveraged since its debt account 70% of a total capital requirement of the project in normal cases. DBE finances projects that are important for sustainable economic growth of the country and are in line with the priority agenda of the regimes at different period.

The Bank also finances a very large size of loan depending on project financial requirements and this could reach up to 25% of its total capital to a single borrower. The Bank charges subsidized simple interest rate, (lower than commercial loans interest rate, i.e. 8.5%), even though the project financing is very risky because of specific nature of projects finance at liquidation; the possibility of economic, political and social change; requirement of costly information for credit appraisal and management, and involvement of so many participants from implementation to operation.

DBE has five regional and one corporate credit processing units. The Corporate Credit Process handles the loan sizes more than regional units sanction limit, which is 15 million. Thus, this study will include projects financed by all DBE credit-processing units.

3.2. Population and Sampling Size

The project selection criteria for this study requires that the project to be selected has been operational at least for one year and financed by DBE within the last five years. Projects that have been operational for at least one year are considered, because it is important to assess some of the project failure determinants such as implementation delaying, market problem and financial performance. Project financed within the current five years are preferred in order to focus on the determinants still important for project failure after the bank commenced implementing the financial reform program in its credit processing - the core operation of DBE.

According to the information collected from all credit processing units of the DBE, there are 245 projects that are financed in the current five years (2007 to 2012) and all have already started operation. These projects categorized by operational units, economic sectors, and political regions are presented in Annex 1.

To maintain the representativeness of the samples to all credit-processing units of the Bank, economic sector and political region as much as possible, 122 projects are considered in this study even though 100 projects at minimum are sufficient according to simplified formula for proportions sample size determination at 95% confidence level, Israel (2009). Out of 122 sampled projects, 62 are failed while the remaining 60 are successful projects.

$$n = N / [1 + N (e^2)]$$

Where n is the sample size, N is the population size, and e is the level of precision.

3.3. Sampling Procedure

Stratified sampling method is used in selection of projects for this study to ensure the inclusion of projects from all strata. First, projects are stratified by political regions in which they are operating, economic sectors in which they are categorized and project status (successful and failed). Then, the required numbers of projects are selected from each stratum randomly.

3.4. Type and Source of Data

Primary data required to capture the determinants mainly explaining project specific and DBE's credit management system are collected from client file, appraisal reports and follow-up reports. Secondary data required for macroeconomic and sociopolitical variables are collected from Ministry of Finance and Economic Development Official (MoFED) Website and Central Statistic Agency (CSA) statistical bulletin respectively.

3.5. Instrument of Data Collection

Data for project specific and DBE's credit management variables are collected using developed format. Some project managers have been interviewed to capture missed information in clients' file and crosschecking of data. The research has accessed DBE's library to collect data for sociopolitical variables and browsed official website of MoFED to collect data for macroeconomic variable.

3.6. Research Design

In this study, both descriptive and explanatory analyses are conducted. Descriptive statistics like table, mean, percentage, etc are used to describe the data. Explanatory analysis using econometrics regression model is employed to analyze cause-effect relation between determinants of failure and DBE financed projects. Setting of major determinants of failure for DBE financed projects is done based on literature review and factors unique to DBE projects.

3.7. Estimation Method

3.7.1. Model Selection

Model selection and mathematical explanation of the Model presented below are as learned from econometrics book of Gujarati (2004). In estimating of the determinants relation with dichotomous dependent variable using the Leaner Probability Model (LPM) is plagued by several problems, such as (1) non-normality of ui, (2) heteroscedasticity of ui, (3) possibility of Yi lying outside the 0 to 1 range as the value of X_i value increases or decreases, and (4) the generally lower R^2 values. We can use Weighted Least Square (WLS) to resolve the heteroscedasticity problem or increase the sample size to minimize the non-normality problem. But even then the fundamental problem with the LPM is that it is not logically a very attractive model because it assumes that $Pi = E(Y = 1 \mid X)$ increases linearly with X, that is, the marginal or incremental effect of X remains constant throughout.

Therefore, what we need is a (probability) model that has these two features: (1) As Xi increases, $Pi = E(Y = 1 \mid X)$ increases but never steps outside the 0–1 interval, and (2) the relationship between Pi and Xi is nonlinear, that is, "one which approaches zero at slower and slower rates as Xi gets small and approaches one at slower and slower rates as Xi gets very large." Geometrically, the model we want would look something the probability lies between 0 and 1 and that it varies nonlinearly with X.

For historical as well as practical reasons, the cumulative distribution functions (CDFs) commonly chosen to represent the 0 to 1 response models are (1) the logistic and (2) the normal, the former giving rise to the logit model and the latter to the probit model.

Between logit and probit, which model is preferable? In most applications the models are quite similar, the main difference being that the logistic distribution has slightly fatter tails. That is to say, the conditional probability Pi approaches zero or one at a slower rate in logit than in probit. Therefore, there is no compelling reason to choose one over the other. In practice many researchers choose the logit model because of its comparative mathematical simplicity. Similarly, the researcher planned to use a logit model to assess the effect of the determinants on the probability of project failure, since it is a simple technique for estimation of the model with binary dichotomous dependent variables (project success or project failure).

3.7.2. The Logit Model

It is known that the probability relation between independent variable (X_i) and dependent variable (Y_i) is explained in the LPM using the following formula.
$$Pi = E(Y = 1 \mid Xi) = \beta_1 + \beta_2 X_i \ldots\ldots\ldots\ldots 1$$

But now consider the following representation of dependent variable:
$$Pi = E(Y = 1/Xi) = \frac{1}{1+e^{-(\beta_1+\beta_2 X)}} \ldots\ldots\ldots 2$$

For ease of exposition, we write (equation 2) as:
$$Pi = \frac{1}{1+e^{-Zi}} = \frac{e^Z}{1+e^Z}\ldots\ldots\ldots\ldots .3$$
$$\text{Where } Z_i = \beta_1 + \beta_2 X_i$$

Equation 3 represents what is known as the (cumulative) logistic distribution function.

It is easy to verify that as Z_i ranges from $-\infty$ to $+\infty$, P_i ranges between 0 and 1 and that Pi is nonlinearly related to Z_i (i.e., X_i), thus satisfying the two requirements considered earlier. But it seems that in satisfying these requirements, we have created an estimation problem because Pi is nonlinear not only in X but also in the β's as can be seen clearly from equation 2. This means that we cannot use the familiar OLS procedure to estimate the parameters. But this problem is more apparent than real because equation 2 can be linearized, which can be shown as follows.

If Pi, the probability of project failure according this study, is given by equation 3, then $(1 - P_i)$ will be the probability of project success is:
$$1 - P_i = \frac{1}{1+e^{Zi}} \ldots\ldots\ldots\ldots 4$$

Therefore, we can write

$$\frac{Pi}{1-Pi} = \frac{1+e^{Zi}}{1+e^{-Zi}} = e^{Zi} \quad \ldots\ldots\ldots\ldots.5$$

Now $Pi/(1-Pi)$ is simply the **odds ratio** in favor of project failure—the ratio of the probability that a project failure to the probability that project success. Thus, if $Pi = 0.8$, it means that odds are 4 to 1 in favor of the project failure. Now if we take the natural log of equation 5, we obtain:

$$Li = Ln\frac{Pi}{1-Pi} = Zi = \beta_1 + \beta_2 X_2 + \beta_i X_i \ldots\ldots.6$$

That is, L, the log of the odds ratio, is not only linear in X, but also (from the estimation viewpoint) linear in the parameters. L is called the **logit.**

If L, the logit, is positive, it means that when the value of the regressor(s) increases, the odds that the regress and equals 1 (meaning some event of interest happens) increases. If L is negative, the odds that the regress and equals 1 decrease as the value of X increases. To put it differently, the logit becomes negative and increasingly large in magnitude as the odds ratio decreases from 1 to 0 and becomes increasingly large and positive as the odds ratio increases from 1 to infinity. More formally, the interpretation of the logit model given in equation 6: β_2 & β_i, the slopes, measure the change in L for a unit change in X_2 *and* X_i respectively. The intercept β_1 is the value of the logodds in favor of project failure without the effect of the determinants (X_i). Like most interpretations of intercepts, this interpretation may not have any physical meaning. In estimation of this model, the researcher has used stat software.

3.7.3. Model Specification

The logit model underlying response variable 'Z_i' in this study defined by the regression relationship of explanatory variables that contain major determinant from project specific, credit management system of the Bank, macroeconomic and political factors as shown here below.

$$Z_i = \beta_0 + \beta_1 X_1 + \cdots + \beta_{15}'X_{15}$$

The probability of a response is presented as where β_0 is a constant, β_i is the probability of a response and 'X' is a vector of independent variables.

Z_i: Project status represented by dummy variable 0 for failure and 1 for success
X_1: Project size presented with total project cost, measured in Birr,

X_2: Implementation delay measured by percentage actual time overrun from planned schedule,

X_3: Market problem presented by percentage actual sales short fall from planned in appraisal,

X_4: Manpower quality will be represented by weighted average of percentage variation from planned qualification (3), quantity (2) and experience (1),

X_5: The owner support to the project will be measured by relevance of educational background/experience for the project using dummy variable 1 for relevance and 0 for irrelevance,

X_6: Project planning capacity of the Bank measured by weighted average of number of reallocation (2) and rescheduling (1),

X_7: Technical support of the Bank measured by weighted average of number of follow-up (2) and inspection (1) undertaken for project,

X_8: Over estimation of project return measured by percentage variation between actual cash flow and appraisal cash flow,

X_9: Exchange rate impact is proxy by percentage cost overrun at implementation from planned project financial requirement at appraisal,

X_{10}: Economic growth rate measured using average GDP contribution of the economic sector in which the project categorized in the years under study,

X_{11}: Impact of inflation captured by average inflation rate of the project commodity (inflation rate of food items and non food items) in the years under study,

X_{12}: Demographic variables are measured by total population size of the regions in which the project operating,

X_{13}: Literacy level of the regions measured by percentage of literate population from the total in which the project operating,

X_{14}: Religion diversity captured by dummy variable for dominant religion in which the project operating (1 for more than 50% Christian dominated region, 2 for more than 50% Muslim dominated region, 3 for more than 50% protestant dominated region and 4 for region no domination of any of the religions),

X_{15}: Jurisdiction system, political system and the problem of corruption is captured by dummy variable that fixed for the regional states in which the project operating (Tigray – 1, Afar – 2, Amhara – 3, Oromia – 4, Somale – 5, Bishangle Gumuz – 6, SNNP – 7, Gambela – 8, Harari – 9, Addis Ababa – 10, and Dire Dewa – 11).

3.8. Dependent Variable and Determinants of the Project Failure

3.8.1. Dependent Variable

The dependent variable of this study, project success or failure, is specified based on the criteria set by Development Bank of Ethiopia. The project to be categorized as successful project according to DBE required properly meeting its debt service fully, performing above breakeven point, and generating or saving at least half of foreign exchange, create half of employment opportunity and generate half of tax revenue for the government from estimated of the same in appraisal report. The project that failed to fulfill any of the above criteria, it is categorized as failed.

3.8.2. Explanatory Variables

The explanatory variables of project failure can be broadly classified as project specific, creditor specific, macroeconomic and sociopolitical variables. The project failure can happen because of negative or positive effect of these variables. The brief discussion of these explanatory variables and their influence presented as follows.

3.8.2.1. Project Specific Explanatory Variables

From identified potential specific causes of project failure during literature review, technical failure, missing of objective/missing stockholders requirement, losses because of uninsured items damage, financial insolvency of the promoter and absence of change control system are not considered as determinant in this study. Technical failure and absence of change control system are dropped because of difficulty of measuring. Missing of established objective /stakeholders' requirement also not considered as determinant since this variable explains the dependent variable (failure/success) as it is discussed in project failure definition.

The occurrence of uninsured items damage is very remote in DBE financed projects since the Bank seriously follows insurance case and settles the premium even if the project fails to settle it; therefore, this variable is also not considered for this study. Financial insolvency of the promoter is not commonly happened cause in DBE financed projects and hence it is not considered in this study as a determinant.

Variables related to project specific data such as size of the project, implementation delay, market problem, manpower quality, management problem and owner support to the project are considered as major project specific determinants with the following understanding.

- **Size of the Project:** Big size projects are believed to calls the attention of financer and different actors of the government because of a big risk from their failure, and expected to get more support and closed supervision. As the result, the probability of failure in big projects assumed to be lesser than small size projects. Size of the project, therefore, represented by total financial requirement of the project.

- **Implementation Delay:** Over lengthen project implementation from schedule exposes to accumulation of pre-production interest and distortion in projected cash flow in addition to missing market opportunity. This in turn causes project failure because of incapability to settle debt commitment. Implementation delay is captured by percentage time overrun from planned schedule in DBE's appraisal report.

- **Market Problem:** the demand decline for the project's product because of product quality, positioning, pricing, promotion, etc, largely affects the project success since it fails to meet the entire above requirement for success. Thus, the market problem is captured by proxy data of percentage actual sales short fall from the planned in DBE's appraisal report.

- **Management Problem and Manpower quality:** a soft element of any business is human resource. Running of any business without competent manpower leads to project failure since human resource the only factor that makes other resources productive. This determinant is captured by percentage variation in number, qualification and experience of the project employees with respect to DBE's appraisal report.

- **The Owners Support to the Project:** owners having relevant educational background or experience to the project are believed to provide better support than without, because they can easily understand the business variables and establish proper communication system with project staffs. Irrelevant education or experience, therefore, can lead to project failure. In case of PLC and share companies, the profile of the company general managers considered.

3.8.2.2.   Variables of Credit Management System of DBE

Among major project failure/success determinants that emanate from credit management system of the Bank, over appraisals of collateral and appraisal of project proposals using current price rather than long-term money value are not considered for this study because DBE project financing is not collateral based and the Bank uses discounted project worth assessment methods. Credit management system of the Bank, therefore, represented by project planning capacities, providing technical advice and over estimation of returns from the project.

- **Project planning capacity of the Bank**: poor project planning can expose the project for under/over financing, inconvenience of loan disbursement, incompatibility of repayment schedule with revenue generating nature of the project, etc. These project planning problems finally affect the project performance. Therefore, this determinant is proxy by number of loan reallocation, rescheduling and repayment waving since repayment waving, loan reallocation and rescheduling are the measures taken for correction of the above problems.

- **Technical support level of the Bank:** DBE as project financing Bank filled with multidisciplinary professionals and expected to provide technical advice and alleviate any problems arising in due course of the project life to ensure project success. This determinant is proxy by follow-up coverage of the Bank since the Bank has planned to provide technical service through its follow-up operation twice in a year to every project.

- **Over estimation of returns from the project**: 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.

3.8.2.3.   Macroeconomic Variables

The major macroeconomic variables that can influence project failure/success are change in economic policies, change in exchange rate, increases in energy prices, economic growth, and inflation rate. In this study, change in economic policy and energy prices change are not considered since there is no major economic policy change in the country within the last five years and energy prices change is not discriminating the project in its application.

- **Change in exchange rate:** the exchange rate change mainly affects the planned investment outlay and exposes the projects for financial shortage since most of the project investment items are sourced directly or indirectly from import in Ethiopia case. The impact of exchange rate change, therefore, proxy by cost overrun of the project in this study.

- **Economic growth:** the economic performance of the economic sector in which the given project operating affects the performance of the project. This variable, therefore, captured directly by GDP contribution of the sector in which the project engaged.

- **Impact of inflation:** inflationary situation is not expected to affect all projects similarly. The impact of inflation is, therefore, captured by inflation rate of the commodity in which the project produce is classified.

3.8.2.4. Sociopolitical Variables

The major sociopolitical determinant of project failure/success are demographic variables, literacy level, religion diversity, jurisdiction system, political system, government officials perception for the projects, the politicization of projects as the result of government change, and the problem of corruption. Among these, government officials' perception for the projects and the politicization of projects as the result of government change are not considered as determinant in this study difficulty of information collection and absence of government change in the last five years respectively.

- **Demographic variables:** mainly the size of population difference among the regions does not provide equal opportunity to projects located in different regions; because population size is the main factor that affecting the demand for the product and/or supply of work force. Thus, demographic variables are represented by population size of the regions in this study.

- **Literacy level:** the availability of easily trainable manpower in project area is the main factor for project success/failure. The literacy level of the regions in which the project operating, therefore, plays significant role for project performance. Literacy level of the regions proxy by percentage of literate population from the total.

- **Religion diversity:** the beliefs, values, attitudes, opinions, and life style of the society depend up on religious condition of the region. Since projects are operating in the society influenced by different religion dominated society of different regional state, their performance can be influenced by religion diversity of the region. The impact of religion on the project failure/success captured by religion diversity of the region in which the project operating.

- **Jurisdiction system, political system and the problem of corruption:** the project performance is believed to be affected by efficiency of jurisdiction system, political system (good governance, fair business regulation, stability, security, etc.) and level of corruption level. The levels of these variables are not similar across the regional states of the country. However, there is no information that depicts the level of these variables for the regional states of Ethiopia separately as Transparency International rating the country. Thus, these variables are captured by dummy variable given to the region in which the project operating.

3.9.   Test Statistics

In this study, preliminary significance test for each explanatory variable is done using t-test and Chi^2 test for continuous and discrete data respectively. Moreover, variance inflation factor (VIF) and correlation test is used to check the existence of multicollinearity problem among independent variable. Multicollinearity problem happens when there is strong correlation between two or more variables. The occurrence of multicollinearity can result with wrong results during regression, Pidyck & Rubinfied (1998). The mean VIF result above 10 depicts the existence of multicollinearity problem with in the explanatory variables and VIF value for each explanatory variable greater than 10 indicates the independent variable with multicollinearity problem, but does not show in relation to other variable. Therefore, to identify the explanatory variables having multicollinearity problem, running of correlation test is very important. The correlation result above 0.5 for two explanatory variables and makes the regression coefficients to be estimated poorly.

The goodness of the model to fit the data in logit regression model can be tested using Wald Chi square, Likelihood ratio (LR) Chi square, Pseudo R^2 or Goodness-of-fit test. Among these tests, Pseudo R^2 test is recommendable for large sample size even though it is not widely accepted for binary models (Aldrich and Nelson, 2000). According to them, if R^2 statistic is close to zero meaning that all coefficients are zero. If pseudo R^2 close to 1, the model is very good. Aldrich and Nelson (2000), recommend that the use of Goodness-of-fit test if pseudo R^2 result closed to zero and accept the model if Goodness-of-fit test is resulted above 50%.

CHAPTER - IV

RESULT AND DISCUSSION

4.1. Descriptive Statistics

Descriptive analysis is presented using statistical tools such as mean, percentage, standard deviation and frequency distribution. Moreover, failed projects are compared with successful once using descriptive statistics for each explanatory variable. The significance of each independent variable separately in relation to the dependant variable is tested using T and Chi-square tests.

4.1.1. Summary of Project Status by Project Specific Variables

Project specific explanatory variables are those causes of project failures that emanate from the project itself. The investment size (project cost) of the sampled DBE financed projects within the last five years and have been operational for at least one year ranges between Birr 146,000 and Birr 1,800,000,000 and the mean investment size of the sample projects is Birr 60,100,000 at standard error of 23,700,000. The above statistical figures has depicted that the involvement of DBE in a wide range of financing without limiting the size of the projects. When this total statistics is compared to the same statistics of failed projects and successful projects, the failed projects statistics results in all cases are greater than the total project statistics, but the statistical result of the same for successful projects are less, see table 4.1. The t-test result also has shown the significance of the explanatory variable at 95% confidence level since the degree of freedom is more than 20.

Regarding project implementation delay (time overrun), the average time overrun of sampled projects is 21% when compared to the planned schedule at standard error of 7%, this figure grows to 40% for failed projects at standard error of 11% and it goes down to 2% at standard error of 5% for successful projects. Similarly, the time overrun for failed project ranges between -100% and 367%, it ranges between -100% and 100% for successful projects. The t-test statistics has also strongly depicted the significance of the explanatory variable at 95% confidence level, see table 4.1.

The sales shortfall variable is used to indicate the market problem of the project. It is measured by the actual sales change from planned in DBE appraisal report. In this explanatory variable, 15 observations out of 122 are missing, therefore, the average of the collected observation used for analysis purpose.

The mean sales shortfall of the sampled projects is -35% at standard error of 4%, however, it worsen to -46% for failed projects at standard error of 5% whereas it improves to -23% for successful projects at standard error of 5%. The sales shortfall range drops between more or less within the same range for successful and failed projects that is negative 97% to 100% and negative 100% to 100% respectively. The t-test statistics of this explanatory variable has shown the inverse but a strong significance at 5% precision level for project failure, see table 4.1.

Recruitment variation explains about operating of the project using manpower lesser by number, qualification and experience than the planned in DBE appraisal report. The mean weighted average recruitment variation of sampled projects is negative nine percent at 4% standard error. This variation is deteriorating to negative 21% at 5% standard error whereas increasing to 3% at 6% standard error for failed and successful projects respectively. The figures of this explanatory variable vary within negative 100% at minimum and 181% at maximum. However, the range for failed projects is between negative 100% and 115% while it varies between negative 50% and 181% for successful projects. The same to sales shortfall, t-test statistics depicted that the inverse but strong significance of recruitment variation for project failure at 95% confidence interval, see table 4.1.

The promoter support to the project explained with relevant experience or educational background of the project owner for sole proprietorship establishments or the company general manager for private limited and share companies. The assumption is, if the promoter has relevant experience or educational background about the business, he/she can support the project with knowledge and establish smooth relation with employed professionals.

Concerning this explanatory variable, 74% of the projects considered in this study are established by promoters with relevant experience or educational background while the remaining 26% are established by owners having irrelevant experience and educational background. However, very unlikely this figure decreased slightly for successful projects, 72% of successful projects are established by promoters having relevant experience or educational background whereas the remaining 28% are established by owners with irrelevant educational background or experience. In contrary, 76% of the failed projects are established by the promoters with relevant educational background or experience while 24% of them established by owners having irrelevant educational background or experience. The Chi-square statistics has also exhibited that the insignificance of the explanatory variable for project failure since the result is 0.27 at 1 degree of freedom, see table 4.1.

Table 4.1: Descriptive statistic of project specific variables

Project status	Summary Statistics	Project cost	Time overrun	Sales short fall	Recruitment Variation	Promoter Capacity Relevant	Irrelevant
Failed	Mean	105,000,000.00	40%	-46%	-21%		
	Standard Deviation	362,000,000.00	90%	41%	42%		
	Standard Error for Mean	45,900,000.00	11%	5%	5%		
	Minimum	146,000.00	-100%	-100%	-100%		
	Maximum	1,800,000,000.00	367%	100%	115%		
	Percentage					76%	24%
Successful	Mean	14,000,000.00	2%	-23%	3%		
	Standard Deviation	37,500,000.00	37%	42%	44%		
	Standard Error for Mean	4,843,495.00	5%	5%	6%		
	Maximum	245,551.00	-100%	-97%	-50%		
	Minimum	262,000,000.00	100%	100%	181%		
	Percentage					72%	28%
Total	Mean	60,100,000.00	21%	-35%	-9%		
	Standard Deviation	262,000,000.00	72%	43%	44%		
	Standard Error for Mean	23,700,000.00	7%	4%	4%		
	Minimum	146,000.00	-100%	-100%	-100%		
	Maximum	1,800,000,000.00	367%	100%	181%		
	Percentage					74%	26%
Test Statistics	T Value (120 degree of freedom)	1.93	3.04	-2.94	-3.00		
	X^2 Value (1 degree of freedom)					0.27	

Source: Survey result

4.1.2. Project Status by DBE's Credit Management Explanatory Variable

DBE's credit management explanatory variables are causes of project failure that come from credit processing system of the Bank. In project financing, the main competency the Bank required to have is project planning capacity. The incapability of the Bank regarding project planning is reflected by frequent rescheduling and waver of repayment, and reallocation of funds from one investment component to the other. The mean of this explanatory variable for the projects under this study is 0.17 at standard error of 0.06. If the mean of failed projects is looked separately, it grows to 0.26 at standard error of 0.06 while it drops to 0.08 for successful projects at standard error of 0.03. The t-test statistics of this variable has exhibited that the statistical significance at 5% precision level for project failure, see table 4.2.

The other important variable for project success/failure is follow-up coverage, because follow-up activities is believed as main tool to enhance loan collection, provide technical support to projects, take corrective measure at any deviation from the planned direction and provide feedback for future project financing. Even though, follow-up coverage is believed to have impact on project success/failure, the t-test statistics depicted that the insignificance of the explanatory variable for project failure in DBE case since it is less than 1.73 at 95% confidence level. However, it is statistically significant at 90% confidence interval. The mean follow-up coverage for the projects under study is 87% at standard error of 5%. The mean follow-up coverage for failed projects is a bit less than the total average, that is, 81% at standard error of 7%. The mean of the same for successful projects is 93% at standard error of 6%. The follow-up coverage ranges from 0% to 300% for failed projects, but 10% to 325% to successful projects.

Over estimation of project return leads to financing of not viable projects and shortening of repayment period since determination of repayment period solely bases on payback period or cash flow. Regarding this explanatory variable, 23 observations are missing. The average of the others observations are replaced in the place of the missing for analysis purpose. The mean cash flow over estimation of the projects under consideration and successful projects are the same (31%) at different standard error, 11% and 8% respectively. The mean of this explanatory variable is 32% at 12% standard error for failed projects, which is slightly greater than the total average. The data for this variable vary between negative 173% and 367% for all sampled and failed projects. However, it ranges between negative 113% and 265% for successful projects. However, the t-test statistics has shown the insignificance of the variable for project failure at 95% confidence interval.

Table 4.2: Descriptive statistics for DBE credit management explanatory variable

Project Status	Summary Statistics	DBE Planning Capacity	Follow-up Coverage	Cash flow Overestimation
Failed	Mean	0.26	81%	32%
	Standard Deviation	0.45	55%	91%
	Standard Error	0.06	7%	12%
	Minimum	0.00	0%	-173%
	Maximum	2.33	300%	376%
Successful	Mean	0.08	93%	31%
	Standard Deviation	0.26	50%	82%
	Standard Error	0.03	6%	11%
	Minimum	0.00	10%	-113%
	Maximum	1.50	325%	265%
Total	Mean	0.17	87%	31%
	Standard Deviation	0.38	53%	86%
	Standard Error	0.03	5%	8%
	Minimum	0.00	0%	-173%
	Maximum	2.33	325%	376%
Test Statistics	T-test (Degree of Freedom 120)	2.60	-1.26	0.08

4.1.3. Summary Statistics for Macroeconomic Variable

Macroeconomic indicators, such as economic growth, exchange rate and inflation have their own impact on project performance. To measure the impact of these variables, the average GDP growth of the sub-sectors and inflation rate of the commodities by category for the last five years is considered, see Annex 2. The average figures of GDP by sub-sector are tagged to each project to which it classified and the inflation rate of the commodities are fixed to each project based on its product to which it categorized.

However, exchange rate is proxy by investment cost overrun of the project since exchange rate has no direct unique relation to each project unless measured by its impact. The impact of inflation on projects fundamentally reflected by investment cost overrun in countries like Ethiopia, dependent on import for technology, machinery and raw material. The magnitude of exchange rate impact on the projects, therefore, varies with import dependency level for their investment. With this understanding, the statistical description of exchange rate is discussed in this sub title.

The mean investment cost overrun of the projects under this study is 4% at standard error of 4%, while it is negative 4% at standard error of 3% and 12% at standard error of 7% for failed and successful projects respectively. Moreover, the data for successful projects ranges between negative 100% and 67% whereas for failed projects it varies between negative 27% and 405% for successful projects. The t-test statistics also exhibited that the significance of the explanatory variable at precision level of 5%, see table 4.3.

The mean result of sub-sectoral GDP contribution tagged to projects by their classification is 12.67 at standard deviation of 5.17%. The mean of this explanatory variable for failed project is 12.47% and 12.86% for successful projects at standard deviation of 4.86% and 5.5% respectively. The data also ranges from 6.68% to 29.76% for both failed and successful projects. The t-test statistics also depicted the insignificance of this variable at precision level of 5% to explain failure for DBE financed projects, see table 4.3. The mean for inflation rate is 20.21%. This result is very close to results for the total failed and successful projects. However, the range varies from 9.68% to 49.66% for failed projects and 9.68% to 34.04% for successful projects. The same as GDP contribution, the t-test of this explanatory variable has shown the insignificance of the variable to explain DBE financed projects failure, see table 4.3.

Table 4.3: Summary statistics for macroeconomic explanatory variables

Project status	Summary Statistics	Cost overrun	GDP Contribution of the subsector	Inflation rate of the commodity
Failed	Mean	-4%	12.47%	20.03%
	Standard Deviation	22%	4.86%	7.53%
	Standard Error	3%	0.62%	0.96%
	Maximum	67%	29.76%	41.66%
	Minimum	-100%	6.68%	9.68%
Successful	Mean	12%	12.86%	20.39%
	Standard Deviation	56%	5.50%	7.09%
	Standard Error	7%	0.71%	0.91%
	Maximum	405%	29.76%	34.04%
	Minimum	-27%	6.68%	9.68%
Total	Mean	4%	12.67%	20.21%
	Standard Deviation	43%	5.17%	7.29%
	Standard Error	4%	0.47%	0.66%
	Maximum	405%	29.76%	41.66%
	Minimum	-100%	6.68%	9.68%
Test Statistic	T-test (120 Degree of freedom)	-2.07	-0.42	-0.27

4.1.4. Statistical Summary of Sociopolitical Variable

Among the sociopolitical variables considered in this study, population size and literacy level of the area in which the DBE financed projects operating are measured by statistical information of the political regions. The effect of religion on the performance of DBE financed projects is explained by dominant religion in which the projects operating. The information of population size, literacy level and identification of dominant religion is attached in annex III.

The mean population size for the regions in which the sampled projects operating is 15,400,000 at standard deviation of 10,300,000. The mean of this variable increased to 17,500,000 for failed projects at standard deviation of 10,700,000 whereas decreased to 13,200,000 for successful projects at standard deviation of 9,418,635. The t-test statistics has shown that the significance of population size for DBE financed projects failure at 5% precision level, see table 4.4.

Regarding the literacy level of the regions in which DBE financed projects operating, the mean value is 42% at standard deviation of 9%. The mean result of the same is increasing to 44% for failed projects at standard rate of 11% while it decreased to 41% for successful projects at standard deviation of 6%. Literacy level of the region is statistically significant at 10% precision level according to t-test, see table 4.4.

Among the projects selected for this study, 53 projects operating in Orthodox religion dominated areas while 43 projects working in the societies there is no religion dominancy. The remaining 6 and 20 projects operating in the societies dominated by Islam and Protestant religion respectively. If failed projects considered separately, 25 projects are operating in Orthodox religion dominated society, 1 in Islam, 8 in Protestant and the remaining 28 in no religion dominant society. As far as successful projects concerned, 28 projects in Orthodox dominated society, 5 in Islam, 12 in protestant, and the remaining 15 in the society with no religion dominancy. This explanatory variable is statistically insignificant according to X^2 - test statistics for DBE financed projects failure.

Out of failed projects covered by this study, 25 projects are found in Oromia region, 11 in Tigray, 10 in Amhara, 8 in SNNP, 4 in Addis Ababa, 3 in Beshangul gumuz, and one in Gambela political region. Regarding successful projects, 16 are found in Amhara, 12 in SNNP, 11 in Tigray, 9 in Oromia, 6 in Beshangul Gumuz, 5 in Dir Dewa, and 1 in Addis Ababa. This variable also statistically insignificant according to X^2 – test, see table 4.4.

Table 4.4: Summary statistics for sociopolitical explanatory variables

Project status	Descriptive Statics	Population Size	Literacy Level	Religion Dominancy				Political Region							
				Orthodox	Islam	Protestant	No Dominancy	Tigray	Amhara	Oromia	Benshangul	SNNP	Gambela	A.A	Dir Dewa
Failed	Mean	17,500,000	44%												
	Standard Deviation	10,700,000	11%												
	Standard Error for Mean	1,355,167	1%												
	Maximum	28,600,000	85%												
	Minimum	193,204	38%												
	Percentage			25	1	8	28	11	10	25	3	8	1	4	
Successful	Mean	13,200,000	41%												
	Standard Deviation	9,418,635	6%												
	Standard Error for Mean	1,215,940	1%												
	Maximum	28,600,000	85%												
	Minimum	359,358	38%												
	Percentage			28	5	12	15	11	16	9	6	12		1	5
Total	Mean	15,400,000	42%												
	Standard Deviation	10,300,000	9%												
	Standard Error for Mean	928,954	1%												
	Maximum	28,600,000	85%												
	Minimum	193,204	38%												
	Percentage			53	6	20	43	22	26	34	9	20	1	5	5
Test Statics	T-test (DF=120)	2.35	1.44												
	X^2 test (DF=3&7 respectively)				7.54					18.49					

Source: Survey result

4.2. Econometric Results

Minor adjustments are made on dummy variables of Regional dominancy and Political regions explanatory before running regression model because of omitting results as the result of small number of observation in some categories. Therefore, the dummy variables in case of religion dominancy reduced to 3 from 4 by merging Islam and Protestant dominant regions and replacing with "others religions". According to this readjustment, the dummy variable for Orthodox dominated regions is 1, others religions 2, and for no dominancy 3. In the same way, political regions dummy variables also reduced to 4 from 11 by merging Afar, Somali, Harari, Gambela, Beshangul Gumuz, SNNP, Addis Ababa and Dre Dewa to one category and called other regions. According the new adjustment, Tigray is given 1, other regions 2, Amhara 3 and Oromia 4.

4.2.1. Multicollinearity Test

The VIF test has shown that the absence of multicollinearity problem in totality by resulting 5.12 mean VIF, but VIF result of literacy level, regional dominance and political religion have exhibited above 10 (see Annex V). However, the verification made using correlation test on Stata software has depicted that the absence of serious multicollinearity problem among explanatory variable except a sleight relation within GDP contribution of the subsectors in which the projects engaged and religion dominancy, and population size and religion dominancy. The results among these variable are also not exaggerated as such since they are below 0.55, see Annex IV. Therefore, all explanatory variables are used in final regression model.

4.2.2. Heteroscedasticity Test

Heteroscedasticity is a systematic error that happens when the variance of the errors is constant, Gujarati 2005. Heteroscedasticity problem makes the model inefficient to estimate the regression coefficients because of biased variance and covariance of the coefficient. According to Gujarati, in the presence of heteroscedasticity, the usual logit model overestimates the standard errors of estimators. The hererosecedasticity test made using Breusch-Pagan/Cook-Weisberg test of OLS regression on STATA software has shown that the significance of the problem. Thus, to alleviate the hererosecdasticity problem, the logit model is used with robust.

4.2.3. The Goodness of the Model

As it is shown in table 4.5, the pseudo R^2 value is 0.3453, which means that the model explains 34.53% of the data and depicted the weakness of the model to fit the data. However, pseudo R^2 is not widely accepted test to show the goodness of the binary regression models. Therefore, the goodness-of-fit test is continued further to check the appropriateness of the model to explain the data. The goodness-of-fit test for the model exhibited that 78.69% of the observations are classified correctly by this regression model and confirmed that the fitness of the regression model to estimate the explanatory variables, see Annex IV.

4.2.4. Logit and Logistic Model Estimation Results and Interpretation

Logit model is used to estimate the magnitude, sign and significance of each coefficient. Logistic model is used to estimate the odd ratios. The estimation results of these two models tabulated in table 4.5 and the following explanations refers this table. In both model, fifteen explanatory variables are used, of which 4 explanatory variables are statistically significant at 5% precision level and 3 at 10% precision level. Even though, the significance level of others 8 variables is very low, they have shown that interesting inference in sign.

As portrayed in table 4.5, from project specific explanatory variables, time overrun, sales shortfall and recruitment variation are statistically significant for DBE financed project failure. Even though, project size and promoter capacity are not statistically significant, the estimation result depicted that the increase in project investment cost and relevance experience or educational background to reduce the probability of DBE projects failure, see table 4.5. Among three DBE's credit management system variables, only DBE's project planning capacity is statistically significant for DBE financed project failure while follow-up coverage and cash flow overestimation are not statistically significant. However, the sign of the coefficients for these variables indicated that the increase in follow-up coverage to decrease the project failure and the overestimation of cash flow to increase project failure.

Regarding macroeconomic variables, the proxy measure of exchange rate – project cost overrun is statistically significant. On the other hand, GDP contribution and inflation rate not statistically significant. However, the sign of GDP contribution of the sub sector in which the project engaged and the inflation rate of the commodity in which the product of the project categorized have exhibited inverse relation with project failure of DBE financed projects.

As far as sociopolitical explanatory variables are concerned, population size and literacy level in which the projects operating are statistically significant but religion dominancy and political region are not. However, the failure of DBE financed projects slightly decreasing for projects established in regions where others religions dominating or no religion dominancy as compared to Orthodox dominated regions. Project failure is also slightly increasing in Oromia, Others and Amhara regions when compared to Tigray region and relatively higher magnitude in Oromia.

Among statistically significant explanatory variable, recruitment variation and investment cost overrun are significant at 1% precision level. The coefficient of recruitment variation indicates that the existence of direct relation between explanatory variable and failure of DBE financed projects. The marginal effect (dy/dx) value of the same also has shown that the probability of project being failure is 54% for 1% increase in recruitment variation. This means, the ratio of the probability that the project exposed for failure to the probability of the project being successful is 9.6 to 1 if the weighted average change of actual manpower recruitment below planned in appraisal report increased by 1% according to the odd ratio result. Therefore, running of projects using below from the number of manpower, educational background and experience stated in appraisal report is the major cause for DBE financed project failure.

Similar to recruitment variation, the coefficient of sales shortfall depicts that the existence of significant positive relation with failure of DBE financed projects at 10% precession level. According to the value of marginal effect, the probability of project failure is increasing by 31% when the product sales decreases by 1% from the appraisal report. The odd ratio has depicted that the probability of the project being failed to successful is 1.34 to 1 if the projects product sales decreases by 1% from appraisal report sales estimations. This simply shows that product marketing problem is the one among the major cause of failure for DBE financed projects.

The coefficient of time overrun in project implementation has shown that significant inverse relation with failure of DBE financed projects at precession level of 10%. The marginal effect estimate of the same is also depicts that an increase of time overrun in project implementation from appraisal plan 1%, increases the failure of the project by 23%. The odd ration also justifies that the probability of project failure to project success is 0.38 to 1 as the time overrun increase by 1%. Which means that the prolonging of project implementation rather decreases the failure of DBE financed projects. This result is completely against from what is expected and it may be reflects the impact of credit rehabilitation operation of the Bank and the corrective measures taken to correct the problems emanated from project planning capacity.

Similarly, the coefficient of project planning capacity of DBE reflects that the existence of a significant inverse relation between project failure and the explanatory variable. As corrective measures (rescheduling, reallocation and weaving) is taken to alleviate the project planning problem of DBE increases by 1 unit, the failure of projects decreases by 23% according to the result of marginal effect. In other way, the probability of failure to success is 0.37 to 1 when the corrective measures taken to overcome the problems of project planning increases by 1 unit according odd ratio. Being statistically significance of the corrective measures indirectly indicates that the seriousness of project planning problem in DBE, because the inverse of these result explain that the failure of projects increasing in the absence of these measures.

Investment cost overrun, the proxy of exchange rate impact, is strongly significant and positively related with failure of DBE financed projects at precision level of 1%. The marginal effect of this explanatory variable has shown that the increase of investment cost overrun by 1% increases the probability of failure by 80%. The odd ratio of this explanatory variable also depicted that the probability failure to success is 3.82 to 1 whenever the investment cost is increased by 1% from planned at appraisal. The inflection of these results is that the projects experiencing investment cost overrun are venerable for failure.

The sociopolitical explanatory variable, population size and literacy level of the regions in which the project operating are statistically significant at 5% precision level and has inverse relation with DBE financed projects as the coefficient of the variable depicts. This implies that the projects established in regions with high population and literacy level have good chance to be successful by utilizing the easily trainable manpower and market opportunity created from large population.

Table 4.5: Logit and Logistic models estimation results

Number of observation = 122
Wald chi2(18) = 32.99
LR Chi2(18) = 58.38
Prob > Chi^2 = 0.0000
Pseudo R2 = 0.3453

Log pseudo likelihood = -55.357257

Project status	Coefficient	Odds Ratio	Robust Std. Error	P>z	dy/dx	[95% Conf.	Interval]
Project cost	-3.72E-09	1.0000000	2.34E-09	0.112	-9.70E-10	-8.31E-09	8.7E-10
Time overrun	-0.9561063	0.3843866	0.4941067	0.053	-0.2308959	-1.924538	0.0123249
Sales short fall	1.341984	3.8266280	0.7217119	0.063	0.3091137	-0.0725455	2.756513
Recruitment variation	2.261122	9.5938480	0.6300384	0.000	0.5433644	1.026269	3.495975
Promoter capacity	-0.0378922	0.9628167	0.6380172	0.953	-0.0329201	-1.288383	1.212598
DBE planning capacity	-0.9987605	0.3683357	0.5472744	0.068	-0.2311106	-2.071399	0.0738775
Follow-up coverage	-0.0206087	0.9796023	0.4874757	0.966	-0.0051994	-0.9760435	0.9348262
Cash flow over estimation	0.2629797	1.3008000	0.2847966	0.356	0.0321283	-0.2952113	0.8211708
Cost overrun	3.985586	3.8168100	0.8000010	0.006	1.040757	1.154256	6.816915
GDP contribution	-0.0209139	0.9793033	0.0556711	0.707	-0.003719	-0.1300273	0.0881995
Inflation rate	-0.0493805	0.9518189	0.0333395	0.139	-0.0125569	-0.1147247	0.0159638
Population size	-0.000000118	0.9999999	5.09 E-08	0.020	-3.22E-08	-0.000000218	-1.83E-08
Literacy level	-8.61239	0.0001818	4.1566580	0.038	-2.204247	-16.75929	-0.4654897
Religion dominancy (Base is Orthodox)					-0.0506209		
Others Religions	-1.234533	0.2909705	3.2051980	0.700		-7.516606	5.047539
Protestant	-0.3280048	0.7203596	3.6270870	0.928		-7.436965	6.780955
Political region (Base is Tigray)					0.1415459		
Other regions	0.9283043	2.5302150	3.3150870	0.779		-5.569146	7.425755
Amhara	0.8832797	2.4188200	0.8068167	0.274		-0.698052	2.464611
Oromia	1.314686	3.7235820	4.0133720	0.743		-6.551379	9.180751

Note: 0 failures and 1 success completely determined.

4.3. Finding and Discussion

In this explanatory research, fifteen determinant variables are 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. According to Mubila et.al (20000) statistical analysis of project success for African Development Bank financed projects, time overrun of project implementation negatively affected the project success and this means that it increased project failure.

However, in this study the result is reversed and inducted that decrease of project failure as time overrun increases for project implementation. According to the researcher observation, this is 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; because these corrective measures found statistically significant in reducing project failure in this study.

The project specific explanatory variable, project size that proxied by investment cost of the project is exhibited the same effect on project performance and statistically insignificant as it is shown in Mubila et.al study. Out of three project specific variables included in this study but not in Mubila et.al, two variables (sales shortfall and recruitment variation) are found statistically significant. The remaining, relevance of the project owner's educational background or experience is 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.

Mubila et.al and this study followed completely different approach regarding creditor (Banks') specific explanatory variables. Mubila et.al considered projects after completion and measured the relation of AERR with CERR using OLS model whereas this study considered operational projects and estimated the significance of cash flow over estimation for project failure. loan appraising capacity and technical support are mentioned as project success cause in their study but not measured in any of regression model they used. In this study they 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.

The researcher of this study expects that the result for overestimation of cash flow fail to show the reality because of the short coming discussed in limitation part of the study. Nevertheless, the result indicated that the positive relation of the variable for project failure. As far the insignificance of follow-up coverage is concerned, it simply tells that the follow-up work of DBE is not problem solver by providing technical support based on finding or not aligned with its purpose rather than reported for consumption of performance evaluation since its coverage is used for annual performance measure of credit processing units.

Even though, investment cost overrun of the project used to measure different explanatory variable in this and Mubila et.al 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, though, there is difference in consideration. Mubila et.al utilized project hosting counties' GDP growth for their study, but GDP of the economic sub-sectors in which the project is categorized considered in this study. The estimation of this inductors has shown that statistical significance in Mubila et.al study but not significant in this study. In this study additional macroeconomics explanatory variable, inflation rate, is tested but found statistically insignificant.

Regarding sociopolitical variable, Mubila et.al had used only population size and continental regions while this study included additional two variables (literacy level and religion dominancy) in addition to changing political regional states of Ethiopia in place of continental region. The estimation results of population size in both study has shown that the statistical significance of the variable and similar direction of influencing project performance. Among newly introduced 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 found statistically insignificant.

CHAPTER - V
CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This explanatory research is made to investigate the major determinant of failure for projects financed by DBE assuming that the cause of project failure emanates from project specific, credit management system of the Bank, macroeconomic and sociopolitical factors. To measure the significance of these four categories, 15 major explanatory variables are considered in this study. Five explanatory variables from project specific, three from DBE specific, three from macroeconomic and four from sociopolitical categories are selected. The regression analysis of these explanatory variables with dependent variable, project success/failure, using logit model exhibited that three of project specific, one of DBE specific, one of macroeconomic and two of sociopolitical determinants are statistically significant. This means that none of the four categories is fully significant for DBE financed projects failure or none of them fully insignificant.

The significance of sales short fall for DBE financed projects failure with positive relation is an indication of the country's traditional market system inefficiency and marketing knowledge gap of our local entrepreneurs. As it is known, Ethiopia has no well-established commodity market that moderates the market system and avail pertinent information to the producers in order to align their production with market requirement. The recently established Ethiopian commodity exchange market for agricultural products can be considered as good start if expanded to include others industrial goods in order to solve the problems arising from unsystematic traditional market arrangement that lead to project failure. Moreover, developing of the marketing skill of the project owners and managers has paramount importance to reduce DBE financed project failure. Apart from channeling of credit to fill the failure in money market, DBE also needed to support its customer by providing knowledgeable advice about marketing.

Other serious problem in DBE financed project is running of project using manpower below required knowledge, skill and number as it is revealed strong significance in aggravating project failure in this study. There is a governing perception in our society that looks business projects as opportunity for family job creation and eager to be beneficial through saving from salary payment rather than optimally producing using appropriate manpower. It is common, therefore, seeing most projects filled with relatives than professionals and finally failed.

This study has come across with the result that calls the attention of the Bank about its project planning capacity; because the model result for correction measures used for solving problems esteem from project planning (loan rescheduling, weaving and found reallocations) found significant with negative effect to project failure. This means that DBE's project planning lack to consider the unique natures of the projects during disbursement and repayment scheduling, found allocation, etc. Because, miss planning of these is leads taking repeated corrective measures by the Bank to protect the projects from failure.

Another serious determinant found significant in this study for project failure is investment cost overrun which largely caused by change in exchange rate. The result clearly has shown that the contribution of repeated money devaluation made in current five year for project failure. It is clear that major portion of project financing goes to purchasing of capital goods and the price of these goods affected by money devaluation in countries like Ethiopia - import dependent for their capital goods.

Statistically significance explanatory variables, population size and literacy level of the regions in which the project established has revealed that the importance of assessing these variables to reduce project failure. The result has justified that the suffering of DBE financed projects from shortage of skilled and unskilled labor during production process and being of under challenge at product marketing, especially projects targeting domestic market.

Finally, the explanatory variable that resulted unexpected result, follow-up coverage, is a bad signal for DBE because it has shown that statistically insignificant for project failure. The intention of follow-up process is believed to be providing of technical support to projects based on critical finding to insure the success of projects and enhance collection. The insignificance of this explanatory variable means that the cost a Bank spending for this operation is meaningless because the operation has no contribution either for project success or failure, for which it solely designed. The researcher of this study also agrees with the result of statistical estimation based on observed follow-up reports during data collection. Most of the reports lack critical findings, financially performance and complete physical performance of the projects, comparing and contrasting of the actual to project plan at appraisal, and providing of concrete solution for corrective action. Simply, the follow-up reports seem a visit report in which the visitors reporting what they watched and tolled from project contact person.

5.2. Recommendation

Aligned with the above conclusion, the researcher proposes the following corrective measures that should be considered by concerned stake holders in order to reduce project failure regarding DBE financed projects.

- As far as marketing problem is concerned, the bank need to be involved in finding of market destination for the produce of the projects in addition advising the promoter by assigning operators in credit process that are well trained and experienced in marketing or establishing marketing advisor team. The research wing of DBE, therefore, has to scale-up the market studying method of commodities from traditional gap analysis to standard market research in order to buildup the knowledge of operators in credit processing units. In addition to this, DBE has to arrange training, exposure visit and experience sharing programs to local project managers/owners to improve their marketing knowledge.

    Establishing of different agencies, like horticultural agency, textile and leather agency, metal and steel agency, etc. by the government in order to support the projects technically and in searching of market destination is appreciable. However, the government has to expand the commodity market started on few agricultural products to include other products in order to modernize the market system and disseminate pertinent market information to producers.

- Regarding manpower problem of the projects, the Bank has to impose the project owners to recruit as per stipulated number, experience and knowledge requirements of manpower plan in appraisal documents since the project working capital requirement is determined considering the salary of these employees. However, the researcher observed that some of the appraisal documents lacking qualification level and experience required for each post in their manpower study part. This makes difficult discussing the variation and tacking corrective action for the operators engaged in follow-up operation. Therefore, all loan appraisal document of DBE have to include qualification and experience with the number required for strict imposition of manpower plan implementation. The government is also expected to do the same in addition to providing training in order to change the wrong perceived mind of local project owners, because employment creation and sustainability of project to generate to nation GDP are among the main goal the projects established with all investment policy privilege.

- As far as poor project planning capacity of DBE is concerned, the Bank has to provide specific training to the operators about the nature, production process, marketing and the like of the commodity the project planned to produce before going to appraise blindly. Project financing needs appraising of the business from general business environment, the behavior of the promoters, technical and financial perspective. This nature of project finance requires multidisciplinary professionals; therefore, DBE has to recruit professionals from different profession and train about project appraising technique.

- Moreover, DBE has to assess critically the population size and literacy level of the project and has to ensure a feasible strategy is designed to alleviate the problems related to population when financing projects operating in less populated areas. As far as follow-up is concerned, the Bank has to give intensive training to the operators to fill the skill gap in addition to assigning manpower on merit base. Moreover, the performance evaluating unit has to check the depth of the follow-up report prepared by operating units by going one step forward and has to take appropriate measure rather than collecting simply coverage number.

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Annex I: Number of projects by Operational Units and Economic Sector

Table I - 1: Project population and sample by political region, economic sector and operating unit

Operation Unit	Population of the Projects				Sample of the project			
	Total	Agriculture	Industry	Service	Total	Agriculture	Industry	Service
West Region	43	23	3	17	22	11	2	9
West North Region	70	33	2	35	27	11	2	14
South Region	24	1	8	15	16	1	6	9
North Region	56	19	18	19	19	7	6	6
Corporate	23	6	13	4	18	4	11	3
Central Region	38	5	15	18	20	5	8	7
Total	254	87	59	108	122	39	35	48
Political Region	Population by Political Region				Sample by Political Region			
	Total	Agriculture	Industry	Service	Total	Agriculture	Industry	Service
Tigray	59	19	20	20	22	7	9	6
Afare	0	0	0	0	0	0	0	0
Amhara	70	26	6	38	26	8	4	14
Oromia	62	17	18	27	34	10	11	13
Somali	0	0	0	0	0	0	0	0
Beshangul Gumuz	16	13	0	3	9	7	0	2
SNNP	32	10	7	15	20	6	5	9
Gambela	1	1	0	0	1	1	0	0
Harari	1	1	0	0	0	0	0	0
Dire Dewa	6	0	4	2	5	0	3	2
Addis Ababa	7	0	4	3	5	0	3	2
Total	254	87	59	108	122	39	35	48

Annex II: Macroeconomic Data

Table II - 1: Growth Rate of GDP By Economic Activity at Constant Prices (%)

Industry/Year	2007/08	2008 /9	2009 /10	2010 /11	2011/12	Average
Agriculture, Hunting and Forestry	7.5	6.4	7.6	9	4.9	**7.1**
Crop	8	6.5	8.7	10.3	5	**7.7**
Animal Farming and Hunting	7.3	7	6.2	7.5	5.4	**6.7**
Forestry	4.2	3.1	3.3	3	3.2	**3.4**
Fishing	34.01	26.53	1.65	5.93	21.3	**17.9**
Mining and Quarrying	21.4	12.8	44.2	57.7	12.7	**29.8**
Manufacturing	10.3	9.1	11.6	12.1	13.7	**11.4**
Large and Medium Scale Manufacturing	12.6	10.3	13.6	14.1	18.6	**13.8**
Small Scale and Cottage Industries	5.6	6.4	7	7.2	3.1	**5.9**
Electricity and Water	4.8	5	2.5	19.1	18.2	**9.9**
Construction	11.3	11.7	10.9	12.8	12.5	**11.8**
Whole Sale and Retail Trade	15.8	11.7	9.3	5.9	13.5	**11.2**
Hotels and Restaurants	23.3	23.9	24.3	24.6	10.4	**21.3**
Transport and Communications	11.5	8.9	14.4	9.7	12.1	**11.3**
Financial Intermediation	28.1	16.5	-0.3	23.7	28.6	**19.3**
Real Estate and Renting	17.3	15.9	20	22.1	3.8	**15.8**
Public Administration and Defense	12.5	18.4	8.9	9.4	14.2	**12.7**
Education	14.8	13	17	4.4	4.7	**10.8**
Health and Social Work	15.5	20.4	14	6.2	12.4	**13.7**
Other Social & Personal Services	11.7	6.4	8.1	4.9	5.4	**7.3**
Private Households with Employed Persons	5.3	3.8	4.8	5.1	16.1	**7.0**
Total	**11.4**	**10.1**	**10.5**	**11.4**	**8.6**	**10.4**

Source: MoFED

Table II - 2: Inflation rate by commodity category (%)

COMMODITY	YEAR					Average
	2007/08	2008/09	2009/10	2010/11	2011/12	
Beverages	14.31	54.33	6.45	11.15	33.72	**23.99**
Cigarettes and Tobacco	7.39	31.09	19.94	31.05	15.64	**21.02**
Clothing and Footwear	14.97	27.19	25.90	28.48	33.55	**26.02**
Construction Materials & Water	12.31	21.65	16.48	20.06	15.04	**17.11**
Furniture Furnishing and Equipment	23.65	26.50	19.46	22.90	27.64	**24.03**
Medical Care and Health	8.73	14.22	16.58	12.03	11.32	**12.58**
Transport and Communication	7.34	7.06	19.45	26.72	18.58	**15.83**
Recreation, Entertainment and Education	8.25	16.02	15.80	24.21	21.57	**17.17**
Personal Care and Effects	13.21	25.85	27.79	29.12	33.19	**25.83**
Miscellaneous Goods	4.26	10.24	9.37	8.23	16.31	**9.68**
NON FOOD INFLATION	**19.50**	**30.02**	**17.70**	**20.50**	**23.53**	**22.25**
Cereals	40.08	72.63	-18.53	-5.01	49.53	**27.74**
Pulses	22.19	36.50	-1.23	25.21	58.26	**28.19**
Bread and other prepared food	33.89	62.24	4.45	4.87	28.16	**26.72**
Meat	18.18	24.15	9.01	7.62	55.84	**22.96**
Milk, Cheese and egg	18.20	35.02	15.48	20.85	30.23	**23.96**
Oil and fats	49.54	9.83	-1.68	48.82	28.23	**26.95**
Vegetable and fruits	39.63	16.28	9.99	54.85	21.95	**28.54**
Spices	147.67	-18.66	-20.03	58.80	40.49	**41.66**
Potatoes, other Tubers and stems	26.43	49.18	3.29	20.35	42.51	**28.35**
Coffee, (been, whole) and Tea leaves	24.64	13.83	22.19	66.01	43.53	**34.04**
Other Foods Items	3.20	58.19	19.45	7.90	10.80	**19.91**
Milling charge	10.98	13.84	19.64	11.91	15.65	**14.40**
Food taken away home	17.95	27.28	15.57	17.55	33.56	**22.38**
FOOD INFLATION	**52.07**	**70.10**	**-4.90**	**8.53**	**45.52**	**34.26**

Source: Calculated from monthly inflation index report of MoFD 2012

ANNEX III: Demographic Information of the Political Regions

Table III - 1: Population distribution by political region and religion

Region	Population	Orthodox	Islam	Protestant	Catholic	Others	Literacy Level
Tigray	4,316,988	4,125,497	170,833	3,639	15,668	1,351	45.4%
Afar	2,390,273	84,440	2,063,306	15,016	1,601	1,027	17.3%
Amhara	17,221,976	14,214,635	2,953,819	30,255	4,278	18,989	38.0%
Oromia	26,993,933	8,204,908	12,835,419	4,780,917	122,138	1,050,560	39.1%
Somali	4,445,219	27,949	4,375,104	2,637	1,302	38,227	14.0%
Bishangul Gumuz	784,345	261,208	352,775	106,083	4,752	59,527	39.5%
SNNP	14,929,548	2,964,321	2,108,103	8,282,625	357,507	1,216,992	41.8%
Gambela	307,096	51,474	14,925	215,233	10,357	15,107	49.5%
Harari	183,415	49,716	126,534	6,324	524	317	59.7%
Addis Ababa	2,739,551	2,045,445	444,025	212,907	13,202	23,972	85.3%
Dire Dewa	341,834	87,725	242,072	9,608	1,461	968	38.0%

Table III - 2: Total population by political region

Region	Growth Rate	2007/08	2008/09	2009/10	2010/11	2011/12	Average
Tigray	2.5%	4,316,988	4,424,913	4,535,536	4,648,924	4,765,147	4,538,301
Afar	2.2%	2,390,273	2,442,859	2,496,602	2,551,527	2,607,661	2,497,784
Amhara	1.7%	17,221,976	17,514,750	17,812,500	18,115,313	18,423,273	17,817,562
Oromia	2.9%	26,993,933	27,776,757	28,582,283	29,411,169	30,264,093	28,605,647
Somali	2.6%	4,445,219	4,560,795	4,679,375	4,801,039	4,925,866	4,682,459
Bishangul Gumuz	3.0%	784,345	807,875	832,112	857,075	882,787	832,839
SNNP	2.9%	14,929,548	15,362,505	15,808,018	16,266,450	16,738,177	15,820,940
Gambela	4.1%	307,096	319,687	332,794	346,439	360,643	333,332
Harari	2.6%	183,415	188,184	193,077	198,097	203,247	193,204
Addis Ababa	2.1%	2,739,551	2,797,082	2,855,820	2,915,793	2,977,024	2,857,054
Dire Dewa	2.5%	341,834	350,380	359,139	368,118	377,321	359,358

Table III - 3: Religion distribution by political religion in percentage

Region	Orthodox	Islam	Protestant	Catholic	Others	Dominant Religion
Tigray	95.56%	3.96%	0.08%	0.36%	0.03%	Orthodox
Afar	3.53%	86.32%	0.63%	0.07%	0.04%	Islam
Amhara	82.54%	17.15%	0.18%	0.02%	0.11%	Orthodox
Oromia	30.40%	47.55%	17.71%	0.45%	3.89%	No Dominant
Somali	0.63%	98.42%	0.06%	0.03%	0.86%	Islam
Bishangul Gumuz	33.30%	44.98%	13.53%	0.61%	7.59%	No Dominant
SNNP	19.86%	14.12%	55.48%	2.39%	8.15%	Protestant
Gambela	16.76%	4.86%	70.09%	3.37%	4.92%	Protestant
Harari	27.11%	68.99%	3.45%	0.29%	0.17%	Islam
Addis Ababa	74.66%	16.21%	7.77%	0.48%	0.88%	Orthodox
Dire Dewa	25.66%	70.82%	2.81%	0.43%	0.28%	Islam

Annex IV: Correlation Statistics

Table IV – 1: Correlation statistics

Variables	Project status	Project cost	Time overrun	Sales short fall	Recruitment variation	Promoter capacity	DBE Planning capacity	Follow-up coverage	Cash flow Over estimation	Cost overrun	GDP contribution	Inflation rate	Population size	Literacy level	Religion dominancy	Political region
Project status	1.0000															
Project cost	-0.1736	1.0000														
Time overrun	-0.2674	0.0781	1.0000													
Sales short fall	0.2591	-0.0612	-0.2080	1.0000												
Recruitment variation	0.2646	-0.0464	0.0466	0.0362	1.0000											
Promoter capacity	-0.0470	0.1059	-0.0739	0.0120	0.0711	1.0000										
DBE Planning capacity	-0.2308	0.3065	0.2962	-0.2275	0.0855	0.0171	1.0000									
Follow-up coverage	0.1141	-0.1290	-0.1490	0.0466	0.0064	0.0217	-0.1609	1.0000								
Cash flow over estimation	-0.0075	-0.0611	0.0043	-0.1135	-0.2049	-0.1582	-0.0518	0.1615	1.0000							
Cost overrun	0.1862	0.0022	-0.0601	0.0492	0.2737	0.1084	-0.0598	0.1626	-0.0328	1.0000						
GDP contribution	0.0379	0.2084	-0.0656	0.2040	0.0137	0.1433	-0.0538	0.0127	0.0777	-0.0141	1.0000					
Inflation rate	0.0246	-0.0068	-0.1964	0.0361	-0.0393	0.0553	-0.2506	0.1225	0.0457	0.1070	-0.3211	1.0000				
Population size	-0.2096	-0.0265	0.2881	0.0027	0.0984	0.0966	0.1762	0.0360	-0.0748	-0.0478	0.1370	-0.1568	1.0000			
Literacy level	-0.1304	0.0007	0.0321	-0.1466	0.0251	-0.0372	-0.0161	-0.1211	0.0261	-0.0358	-0.0347	-0.0854	-0.4067	1.0000		
Religion dominancy	-0.1467	-0.0348	0.2072	0.1286	0.1295	0.1644	0.1128	0.0896	-0.2239	-0.0601	-0.0543	0.0119	0.5259	-0.2877	1.0000	
Political region	0.0802	-0.1576	0.0328	0.1128	0.1911	0.0452	-0.0940	0.3563	0.0629	-0.0235	-0.0131	0.0435	-0.1651	0.3546	0.3076	1.0000

Annex V: Variance Inflation Factor

Table V – 1: Variance inflation factor

Variable |	VIF	1/VIF
Project cost |	1.35	0.742788
Time overrun |	1.59	0.630641
Sales short fall |	2.24	0.446032
Recruitment variation |	1.40	0.713462
Promoter capacity |	5.05	0.197857
DBE planning |	1.66	0.602770
Follow-up coverage |	5.28	0.189531
Cash flows over estimation |	1.54	0.648618
Investment Cost overrun |	1.21	0.824909
GDP Contribution of Sub sector |	8.62	0.116005
Inflation rate |	8.43	0.118636
Population size |	5.12	0.195311
Literacy level |	14.21	0.070375
Religion dominancy |		
2 |	7.53	0.132882
3 |	17.72	0.056420
Political region |		
2 |	13.94	0.071748
3 |	3.45	0.289458
4 |	19.55	0.051145
Mean VIF |	6.66	

Annex VI: Logistic model for project states

-------- True --------

Classified	D	~D	Total
+	48	14	62
-	12	48	60
Total	60	62	122

Classified + if predicted Pr (D) >= .5

True D defined as project states! = 0

Sensitivity	Pr (+| D)	80.00%
Specificity	Pr (-|~D)	77.42%
Positive predictive value	Pr (D| +)	77.42%
Negative predictive value	Pr (~D| -)	80.00%

False + rate for true ~D	Pr (+|~D)	22.58%
False - rate for true D	Pr (-| D)	20.00%
False + rate for classified +	Pr (~D|+)	22.58%
False - rate for classified -	Pr (D|-)	20.00%

Correctly classified		78.69%