



**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**IMPACT OF LIQUIDITY ON PROFITABILITY OF PRIVATE
COMMERCIAL BANKS – THE CASE OF NIB
INTERNATIONAL BANK S.C.**

BY:

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ADDIS ABABA, ETHIOPIA

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**A THESIS SUBMITTED TO ST. MARY’S UNIVERSITY
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LIST OF ACRONYMS

<i>ALCO:</i>	<i>Asset Liability Committee</i>
<i>ATM:</i>	<i>Automatic Teller Machines</i>
<i>CLRM:</i>	<i>Classical Linear Regression Model</i>
<i>CORE Banking:</i>	<i>Centralized online Real-time Electronic Banking</i>
<i>GDP:</i>	<i>Gross Domestic Product</i>
<i>NBE:</i>	<i>National Bank of Ethiopia</i>
<i>NIB:</i>	<i>Nib International Bank S.C.</i>
<i>NIM:</i>	<i>Net Interest Margin</i>
<i>POS:</i>	<i>Point of Sale</i>
<i>PSS:</i>	<i>Premiere Switch Solutions S.C.</i>
<i>ROA:</i>	<i>Return on Asset</i>
<i>ROE:</i>	<i>Return on Equity</i>
<i>VIF:</i>	<i>Variance Inflation Factor</i>

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ABSTRACT

Liquidity management is crucial, given highly volatile markets and increasingly complex investment options. The misalignment of a portfolio's liquidity profile with cash flow demands can lead to a liquidity squeeze. Accordingly, the overall performance of an institution will be adversely affected. This study intended to investigate the impact of liquidity on profitability of Nib International Bank S.C. Both qualitative and quantitative data were used to address the objective of the study. Purposive sampling was used to gather primary data through questionnaires to test the applicability and effectiveness of liquidity measurement tools the Bank has employed. Quantitative method particularly explanatory and descriptive design was adopted for the study. The time series data taken from the audited financial statements of the Bank, particularly balance sheet and income statements during 1999-2015 were analyzed using multiple regressions. Results of the regression model indicated that Liquidity ratio, NBE Bills and inflation rate had significant positive impact on profitability. However, loan to deposit ratio and deposit interest rate had an inverse relation with insignificant impact on profitability of Nib International Bank. In addition, the existing liquidity measurement tools were found out to be applicable and effective in terms of liquidity measurement and management. Finally, the study concluded that the impact of liquidity on profitability of Nib International Bank was positive and significant.

Chapter One

1. Introduction

1.1. Background of the study

Banks are financial institutions that play intermediary role in the economy through channelling financial resources from surplus economic units to deficit economic units. In turn, they facilitate the saving and capital formation in the economy. In performing these activities, banks are highly dependent upon public confidence and requirement to meet increasing customers' needs and expectations. To fulfil these expectations banks' liquidity position plays a significant role.

Basel Committee on Banking Supervision (2008) defined liquidity as the ability of a bank to fund increase in assets and meet its obligations as they come due without incurring unacceptable losses. Hence, liquidity risk arises from the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans.

More specifically, liquidity risk arises when liability holders such as depositors demand the most liquid asset- cash or when holders of off-balance sheet loan commitments exercise their right to claim the amount (Saunders, et al, 2004). Thus, bank's management must be able to measure and monitor its liquidity position frequently to be able to directly meet liability holder's and borrowers demand so that it can maximize its profit.

Liquidity risk is said to be assassin of banks. This risk can adversely affect both bank's earnings and the capital. Therefore, it becomes the top priority of a bank's management to ensure the availability of sufficient funds to meet future demands of providers and borrowers, at reasonable costs. Episodes of failure of many conventional banks from the past and the present provide the testimony to this claim. It is evident that liquidity and liquidity risk is very up-to-date and important topic. Therefore banks and more so their regulators are keen to keep a control on liquidity position of banks.

Effective liquidity risk management is required so as to ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by both internal and external events and other agents' behaviour. Therefore, this paper attempted to empirically study the impact of liquidity on profitability of Nib International Bank S.C. (NIB).

1.2. Background of the Company

Following the promulgation of Monetary and Banking Proclamation No.83/1994 and License and Supervision of Banking Business Proclamation No. 84/1994 private banks came back to existence in Ethiopia. Accordingly, Nib International Bank (NIB) was established in 1999 in accordance with the above mentioned two proclamations with a paid up capital of Birr 27.6 million and registered capital of Birr 150 million and 27 employees. It commenced operation on October 28, 1999.

The number of shareholders and paid-up capital increased continuously and its paid up capital reached Birr 1.27 billion as at June 30, 2015. Nib International Bank S.C. in collaboration with its sister company, Nib Insurance Co, is on the verge of building its own headquarters at the hub of what is growing into the Ethiopian Financial District.

The staff strength and branch expansion of the Bank has reached at 2,622 and 105, respectively as at June 30, 2015. As a result, boosting the wider branch network and improved customer satisfaction. Further, all city and outlying branches are providing on-line services.

The Bank has successfully implemented the T24 CORE Banking system in order to improve its services and promote efficiency. Similarly, the Bank, in cooperation with Awash International Bank S.C. and United Bank S.C. has established a share company known as "Premiere Switch Solutions S.C." (PSS) for the joint operation and management of Automatic Teller Machines (ATM) and Point of Sale (POS) terminals (and quite recently the other private banks such as Cooperative Bank of Oromia, Berhan International Bank. and Addis International Bank has joined the group and increase the member banks into six).

1.3. Statement of the Problem

In the course of the financial inter-mediation role, commercial banks reactivate the idle funds borrowed from the lenders (depositors) by investing such funds in different classes of portfolios. Such business activity of a bank is not without problems since the deposits from these fund savers which have been invested by the banks for profit maximization, can be recalled or demanded when the later is not in position to meet their financial

obligations. Considering the public loss of confidence as a result of bank distress which has affected the financial sector in the last decade; and the intensity of competition in the banking sector due to the emergence of large number of new banks, every commercial bank should ensure that it operates for profit and at the same time meets the financial demands of its depositors by maintaining adequate liquidity.

A study titled “Liquidity Management and Commercial Banks’ Profitability in Nigeria” by Adebayo et.al. (2011) found out that there exist a positive relationship between liquidity and profitability. On the contrary, according to Molyneux and Thornton (1992), and Guru, Staunton and Balashanmugam (1999), there is a negative and significant relationship between the level of liquidity and profitability.

Tseganesh (2012) made a study so as to identify determinants of commercial banks liquidity in Ethiopia and then to spot the impact of banks liquidity upon financial performance through the significant variables explaining liquidity. Accordingly, the researcher found out that there exist non-linear relationship between liquidity and bank performance.

In reference to a study conducted by Lily (2014) to assess the impact of liquidity on profitability of Awash International Bank S.C., it was found out that there is non-linear relationship between liquidity and profitability.

The theories and research conducted in the same area have varying conclusion towards the impact of liquidity on profitability of commercial banks. For some studies there exists a negative relationship between liquidity and profitability (Molyneux et.al., 1992 and Guru et.al., 1999) while for some others (Adebayo et.al. 2011) there exists a positive relationship between liquidity and profitability. There are also other studies who found out there is non-linear relationship between level of liquidity and banks profitability (Tseganesh, 2012 and Lily, 2014). Therefore, this study will attempt to investigate this trade-off and what kind of relationship exists between the aforementioned two variables in the context of NIB.

1.4. Research Objective

1.4.1. General Objective

The competitive environment of the financial institutions is so tense that any commercial bank that aims to survive must be fully aware of the consequences of its liquidity and profitability obligations as both variables can make or destroy its future. Consequently, this study will primarily attempt to show the impact of liquidity of NIB on its profitability.

1.4.2. Specific Objectives

In line with the general objective, the study will also attempt:

- To investigate the relationship that prevails between liquidity and profitability of the Bank;
- To find out the extent to which liquidity affects profitability of the Bank;
- To evaluate the effect of external factors on performance of the Bank; and
- To find out the effectiveness of the Bank's liquidity measurement tools.

1.5. Research Questions

The research questions are hereby designed to address the general and specific objectives of this particular study.

1. Is there any relationship that prevails between liquidity and profitability of the Bank?
2. What is the level of effect of liquidity on profitability of the Bank?
3. What are the external factors that affect performance of the Bank?
4. What is the level of effectiveness of the Bank's liquidity measurement tools?

1.6. Significance of the Study

The research will identify the technical and operational challenges of Nib International Bank to remain liquid and at the same time profitable.

This research will also add to the body of literature about determining the impact of liquidity on profitability of commercial banks.

The outcome of this study will further assist other researchers in paving the way for additional studies in the area of the topic under study.

1.7.Scope of the Study

The research is limited to investigating the impact of liquidity on profitability of Nib International Bank based on primary and secondary data for period covering from 1999 (commencement of operation) to June 30, 2015.

1.8.Organization of the Study

The study is organized into five chapters. The first chapter provides background of the study, background of the company, statement of the problems, objectives of the study, research questions, significance of the study and scope and limitations of the study. In the second chapter, review of literature and empirical studies are covered. The research design and methodology is presented in the third chapter. The fourth chapter deals with analysis, presentation and interpretation of data. The fifth chapter provides summary, conclusion and recommendation of the study. Finally the bibliography and appendices are attached with the research paper.

Chapter Two

2. Review of Literature

2.1.Theoretical Review

Financial intermediation role of commercial banks is the bed-rock of the two major functions of commercial banks namely deposit mobilization and credit extension. An adequate financial intermediation requires the purposeful attention of the bank management to profitability and liquidity, which are two conflicting goals of the commercial banks. These goals are parallel in the sense that an attempt for a bank to achieve higher profitability will certainly erode its liquidity and solvency positions and vice versa.

Bank Liquidity simply means the ability of the bank to maintain sufficient funds to pay for its maturing obligations. It is the bank's ability to immediately meet cash, cheques, other withdrawals obligations and legitimate new loan demand while abiding by existing reserve requirements.

Definition of Liquidity by Basel Committee on Banking Supervision (2008)

The Basel Banking Supervision Committee defines liquidity as an entity's capacity to finance increases in its volume of assets and to comply with its payment obligations on maturity, without incurring unacceptable losses.

In this regard, liquidity risk can be expressed as the probability of incurring losses through insufficient liquid resources to comply with the agreed payment obligations within a certain time horizon, and having considered the possibility of the entity managing to liquidate its assets in reasonable time and price conditions.

Liquidity Management

According to Adebayo et.al (2010), Liquidity management refers to the planning and control necessary to ensure that the organization maintains enough liquid assets either as an obligation to the customers of the organization so as to meet some obligations incidental to survival of the business or as a measure to adhere to the monetary policies of the central bank. For a commercial bank to plan for or manage its liquidity position, it first manages its money position by complying with the legal requirement. Actually, management of money position is essential if a bank must avoid excesses or deficiencies

of required primary reserves. Where there is a decline in market price of securities or where additional funds needed to correct the bank reserve position are for a very short time, it will be definitely expensive to sell securities than to borrow from another bank.

Moreover, it may be more desirable to borrow for bank's liquidity needs than to call back outstanding loans or to cancel or place embargo on new loans, a situation that will reduce the existing and potential customers of a bank. Commercial banks are expected to maintain certain levels of reserves. These reserves are statutory requirements stipulated by the central bank specifying the cash reserves equal to certain fraction of the banks' deposits or loans and advances which bank must maintain. The purpose of liquidity management is to ensure that every bank is able to meet fully its contractual commitments. The ability to fund increases in assets and meet obligations as they come due is critical to the ongoing viability of any bank. Therefore, managing liquidity is among the most important activities conducted by banks.

Sound liquidity management can reduce the probability of serious problems. Indeed, the importance of liquidity transcends the individual bank, since a liquidity shortfall at a single bank can have system-wide repercussions. For this reason, the analysis of liquidity requires the management of the bank not only to measure the liquidity position of the bank on an ongoing basis, but also to examine how funding requirements are likely to evolve under various scenarios, including adverse conditions (NBE Risk Management Guidelines, 2010).

2.1.1. Theories of Liquidity and Liquidity Management

The theories and management of liquidity are outlined and explained in this section.

Anticipated Income Theory

This theory holds that a bank's liquidity can be managed through the proper phasing and structuring of the loan commitments made by a bank to the customers. Here the liquidity can be planned if the scheduled loan payments by a customer are based on the future of the borrower. According to Nzotta (1997) the theory emphasizes the earning potential and the credit worthiness of a borrower as the ultimate guarantee for ensuring adequate liquidity. Nwankwo (1991) posits that the theory points to the movement towards self-liquidating commitments by banks. This theory has encouraged many commercial banks to adopt a ladder effects in investment portfolio.

Shiftability Theory

This theory posits that a bank's liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash. This point of view contends that a bank's liquidity could be enhanced if it always has assets to sell and provided the Central Bank and the Discount Market stands ready to purchase the asset offered for discount. Thus this theory recognizes and contends that shiftability, marketability or transferability of a bank's assets is a basis for ensuring liquidity.

This theory further contends that highly marketable security held by a bank is an excellent source of liquidity. Liquidity management theory according to Dodds (1982) consists of the activities involved in obtaining funds from depositors and other creditors (from the market especially) and determining the appropriate mix of funds for a particular bank. This point of view contends that liability management must seek to answer the following questions:

- How do we obtain funds from depositors?
- How do we obtain funds from other creditors?
- What is the appropriate mix of the funds for any bank?

Management examines the activities involved in supplementing the liquidity needs of the bank through the use of borrowed funds.

The liquidity management theory focuses on the liability side of bank balance sheet. This theory contends that supplementary liquidity could be derived from the liabilities of a bank. According to Nwankwo (1991) the theory argues that since banks can buy all the funds they need, there is no need to store liquidity on the asset side (liquidity asset) of the balance sheet.

Liquidity theory has been subjected to critical review by various authors. The general consensus is that during the period of distress, a bank may find it difficult to obtain the desired liquidity since the confidence of the market may have seriously affected and credit worthiness would invariably be lacking. However, for a healthy bank, the liabilities (deposits, market funds and other creditors) constitute an important source of liquidity.

Commercial Loan Theory

A critical underlying assumption of the theory held that short-term commercial loans were desirable because they would be repaid with income resulting from the commercial transaction financed by the loan. This theory has been subjected to various criticisms by

Dodds (1982) and Nwankwo (1992). From the various points of view, the major limitation is that the theory is inconsistent with the demands of economic development especially for developing countries since it excludes long term loans which are the engine of growth. The theory also emphasizes the maturity structure of bank assets (loan and investments) and not necessarily the marketability or the shiftability of the assets.

Moreover, the theory fails to reflect in the normal stability of demand deposits in the liquidity consideration.

This obvious view may eventually have impact on the liquidity position of the bank. Also the theory assumes that repayment from the self-liquidating assets of a bank would be sufficient to provide for liquidity. This ignores the fact that seasonal deposit-withdrawals and meeting credit request could affect the liquidity position adversely.

2.1.2. Liquidity Measurement in Commercial Banks

Practically, liquidity management in commercial banks is surrounding both size of the prospective needs for liquidity at any given time and the availability of sources of liquidity sufficient to meet them. The importance of accurate liquidity measurement cannot be over stressed as it reveals the liquidity positions of the banks through which the operators of the financial market and other creditors adjudged the credit worthiness of the banks.

Liquidity can be measured as a stock or as a flow. From the stock perspective, liquidity management requires an appraisal of holdings of assets that may be turned into cash. The determination of liquidity adequacy within this framework requires a comparison of holding of liquid assets with expected liquidity needs. Stock concept of liquidity management has been criticized as being too narrow in scope.

The flow concept of liquidity measurement views liquidity not only as the ability to convert liquid assets into cash but also the ability of the economic units to borrow and generate cash from operators. This approach recognizes the difficulty involved in determining liquidity standards since future demands are not known. It also recommends accurate forecast of cash needs and expected level of liquid assets and cash receipts over a given period of time for there to be a realistic appraisal of a bank's liquidity position.

Between the two concepts, the stock concept is the widely used and involving the application of financial ratios in the measurement of liquidity positions of commercial banks. One of the popular financial ratios used in such measurement is liquidity ratios

which measures the ability of the bank to meet its current obligations. The liquidity ratios are composed of current ratio and quick ratio.

Current ratio is a measure of a commercial bank's short term solvency and is calculated by dividing current assets by current liabilities incurred. The current assets are composed of cash and those assets which can be converted into cash in a short period which include marketable securities, receivables, inventories, and prepaid expenses. Current liabilities consist of all obligations maturing within a year. They include accounts payable, bills payable, note payable, accrued expenses and tax liability. A current ratio that is greater than one is adjudged satisfactory for most business firms even though it is difficult to authoritatively set one standard for all firms. The problem associated with the measure of liquidity with current ratio is that it is the test of quantity and not quality of the assets and hence, it does not reveal the true position of a firm's liquidity. Current ratio gives a rough idea of the firm's liquidity.

Another aspect of liquidity ratio is quick ratio, which indicates the relationship between liquid assets and current liabilities. Quick ratio is calculated by dividing the quick asset (current asset less inventories) by current liabilities. The quick assets are the assets that can be converted into cash immediately without losing their values. Inventories are subtracted from the current assets because they normally require some time for realizing cash and their value has a tendency to fluctuate.

Quick ratio is considered to be a better guide to the short-term solvency of a firm. A quick ratio is considered to represent a satisfactory current financial condition. However, each industry has its own operating characteristics which demands different financial standards.

Other ratios which have been developed to measure liquidity are liquid assets to total assets; liquid assets to total deposits; loans and advances to deposits. Calculating the ratio of liquid assets to total assets explains the importance of a bank's liquid assets among its total assets. It indicates the proportion of a bank's total assets that can be converted into cash at a short notice. The ratio of liquid assets to total deposits shows what percentage of a bank's deposits is held in liquid form. It relates liquid assets directly to deposit level.

The ratio of loan and advances to deposits reflects the quantity or proportion of the customers' deposits that has been given out in form of loans and the percentage that is retained in the liquid forms. The ratio serves as a useful planning and control tool in liquidity management since commercial banks use it as a guide in lending and investment, and to make a total evaluation of their expansion program. When the ratio rises to a

relatively high level, banks are encouraged to lend and invest and vice versa, to take some benefit of profitability.

Cash ratio i.e. ratio of cash to total deposits or assets is another measure of bank liquidity. Its advantage over others is that liquid assets are related directly to deposits rather than to loans and advances that constitute the most illiquid of banks assets. Its drawback is that a substantial part of the cash assets is not really available to meet most liquidity assets.

According to Obilor (2013), another measure of bank liquidity is the loan to liabilities ratio. The approach recognises that liabilities other than deposits ratio represent potential drain on bank funds.

According to State Bank of Pakistan category, all the above mentioned ratios and measures are classified in the following manner:

- i. Cash Flow Ratios and Limits.** One of the most serious sources of liquidity risk comes from a bank's failure to "roll over" a maturing liability. Cash flow ratios and limits attempt to measure and control the volume of liabilities maturing during a specified period of time.
- ii. Liability Concentration Ratios and Limits.** Liability concentration ratios and limits help to prevent a bank from relying on too few providers or funding sources. Limits are usually expressed as either a percentage of liquid assets or an absolute amount. Sometimes they are more indirectly expressed as a percentage of deposits, purchased funds, or total liabilities.
- iii. Other Balance Sheet Ratios.** Total loans/total deposits, total loans/total equity capital, borrowed funds/total assets etc are examples of common ratios used by financial institutions to monitor current and potential funding levels.

2.2. The Concept of Profitability in Banks

According to Aburime (2008) profit means the difference between the revenue generated from the sale of output and the full opportunity cost of factor used in the production of that output. Included within costs are the premium charged for risk taking and the costs of using the owners capital.

Corporate profit planning remains one of the most difficult and time consuming aspects of financial management because of the many variables involved in the decision which are often outside the control of the company. It is even more difficult if the company is operating in a highly competitive economic environment.

A business unit can only grow focusing on its inner strengths to exploit the opportunities in the market. Consequently, the best definition as cited in Obilor (2013) that was opined by Tsomocos (2003) should be adopted from a survival growth perspective as business unit should think of surviving before making profit. Again, optimizing profit involves two variables; revenue and cost. The issue of profitability is a continuous issue that a company has to consistently make. Essentially profitability is concerned with the level of turnover that must be achieved in order to cover the level of turnover that must be achieved in order to cover costs and make surplus.

Corporate profitability may be improved through ratio analysis, breakeven analysis, marginal analysis, cost control or through financial control. It is therefore necessary to mention at this juncture that whether a bank is planning for profit or taking steps to improve its profitability, it must ensure that it has adequate liquidity to transact business and finance operations. If the plan is to improve or increase profitability by increasing the income level, the bank must be able to determine the financing needs for the new income level.

2.2.1. Measure of Bank Performance

a) Income

Net operating income is computed by subtracting the operating expenses from the operating income of the Bank. It is closely watched by bank managers, bank shareholders, and bank regulators because it indicates how well the bank is doing on an ongoing basis.

Net income, usually referred to as profits after taxes, is the figure that tells us most directly how well the bank is doing because it is the amount that the bank has available to keep as retained earnings or to pay out to stockholders as dividends.

b) Return on Asset (ROA)

The return on assets ratio, often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. ROA is a basic measure of bank's profitability that corrects for the size of a bank. In other words, the return on assets ratio measures how efficiently a bank can manage its assets to produce profits during a period.

Since company assets' sole purpose is to generate revenues and produce profits, this ratio helps management see how well the company can convert its investments in assets into profits.

c) Return on Equity (ROE)

This ratio indicates how profitable a bank is by comparing its net income to its average shareholders' equity. The return on equity ratio (ROE) measures how much the shareholders earned for their investment in the bank. The higher the ratio percentage, the more efficient management is in utilizing its equity base and the better return is to investors.

d) Net Interest Margin (NIM)

Net interest margin (NIM) is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest-earning) assets.

It is a performance metric that examines how successful a bank's investment decisions are compared to its debt situations. A negative value denotes that the firm did not make an optimal decision, because interest expenses were greater than the amount of returns generated by investments.

Although net income gives an idea of how well a bank is doing, it suffers from one major drawback: It does not adjust for the bank's size, thus making it hard to compare how well one bank is doing relative to another or at various levels of asset position. Return on Equity on the other hand is concerned about how much the bank is earning on owners equity investment instead of earning assets. In addition to this, the major weakness of Net Interest Margin as a measure of profitability is that it focuses only on income related to interest by disregarding other forms of income like fees, commissions and others. In general, the aforementioned measurements fail to show the overall performance of a bank. Therefore, for this specific study, the researcher preferred to use ROA as a measure of bank performance due to the above mentioned reasons.

2.3. Empirical Review

A study undertaken by Bordeleau and Graham (2010) on the impact of liquidity on profitability of a sample of large U.S.A and Canadian commercial banks revealed that a nonlinear relationship exists, where by profitability is improved for banks that hold some

liquid assets, however, there is a point beyond which holding further liquid assets diminishes a banks' profitability.

The researchers have identified liquid asset ratio, real GDP growth and short-term funding reliance as a proxy for the independent variable, liquidity. The dependent variable, profitability was represented by return on assets and return on equity. The researchers took the initiative to use econometrics as their method of data analysis for the secondary data that has been used as input for the study.

A study titled "Liquidity Management and Commercial Banks' Profitability in Nigeria" by Adebayo et.al. (2011) found out that there exist a positive relationship between liquidity and profitability. According to the researchers finding, profitability will be optimized only when liquidity is effectively and efficiently managed i.e. when the commercial bank is able to meet its financial obligations and at the same time maximizes its profits. A situation where the commercial banks maintain more than the required liquidity level, the result will be huge stock or idle stock of fund in the vault at the expense of profitability.

The researchers relied on primary data and used questionnaire as their source of data. In the mean time, correlation was used as a method of analysis for the study.

Another study undertaken by Obilor (2013) on the same topic in Nigerian commercial banks with a sample of 3 commercial banks came up with the finding that for banks to resolve the liquidity/profitability trade-off, there is a need for each bank to determine its optimal liquidity position.

The researcher has identified 3 variables such as Bank cash asset, Bank balances, and Treasury Bills and Certificate of Deposit as its independent variables and profit as dependent variable. The source of data and method of data analysis employed by this study were secondary data and regression analysis respectively.

Related Empirical studies in Ethiopia

Some related studies were conducted by different researchers in Ethiopia. Specifically, Dereje (2014), made an exploratory study titled assessment of liquidity risk management practices at Wegagen Bank.

The researcher used questionnaires, interview and annual audited reports and identified that the Bank has been trying to establish independently organized liquidity risk management functions and established Asset Liability Management Committee and put in place policies and limits though they are not effective in dealing with liquidity risks.

Despite the Bank has a problem in monitoring and controlling liquidity position in light of the existing policies and limits, weak management information system and there exist concentration risk of funding sources.

Another study conducted by Lily (2014) to assess the impact of liquidity on profitability of Awash International Bank S.C. with the use of quantitative method particularly descriptive design and a time series data retrieved from the balance sheet and income statements during 1995-2013 were analyzed using multiple regression.

The results of the multiple regression indicated that liquidity has non-linear relationship on profitability.

According to a study by Tseganesh (2012) that tries to identify determinants of commercial banks liquidity in Ethiopia and then to spot the impact of banks liquidity upon financial performance through the significant variables explaining liquidity. Balanced fixed effect panel regression was used for the data of eight commercial banks in the sample covered the period from 2000 to 2011. Eight factors affecting banks liquidity were selected and analyzed.

Accordingly, the researcher found out that there exist non-linear relationship between liquidity and bank performance.

However, this research paper will endeavour to investigate the impact of liquidity on the profitability of Nib International Bank S.C. by taking variables that are distinct from the ones identified by the above mentioned studies. The study will include NBE-Bills to Net Loans and Advances ratio, Liquidity ratio and Loan to Deposit ratio as independent variables that will show the impact of liquidity on the dependent variable, profitability. The study will also use a different method of data collection that will include secondary sources of data. In addition to this, statistical data analysis tools such as correlation and regression analysis will be utilised so as to explicitly show the relationship as well as magnitudinal impact of liquidity over profitability.

2.4. Conceptual Framework

Summarizing the results from numerous studies; Liquidity ratio and loan to deposit ratio (Adebayo et.al. 2011 and Oblor, 2013) were taken as internal factors affecting banks performance. On the other hand; Gross Domestic Product, inflation, interest rate and NBE Bills to Net Loans and Advances ratio were among the external factors that can affect the

performance of a particular bank (Alper and Anbar, 2011; Naceur, 2003; Kaya, 2002 and Nahom, 2015).

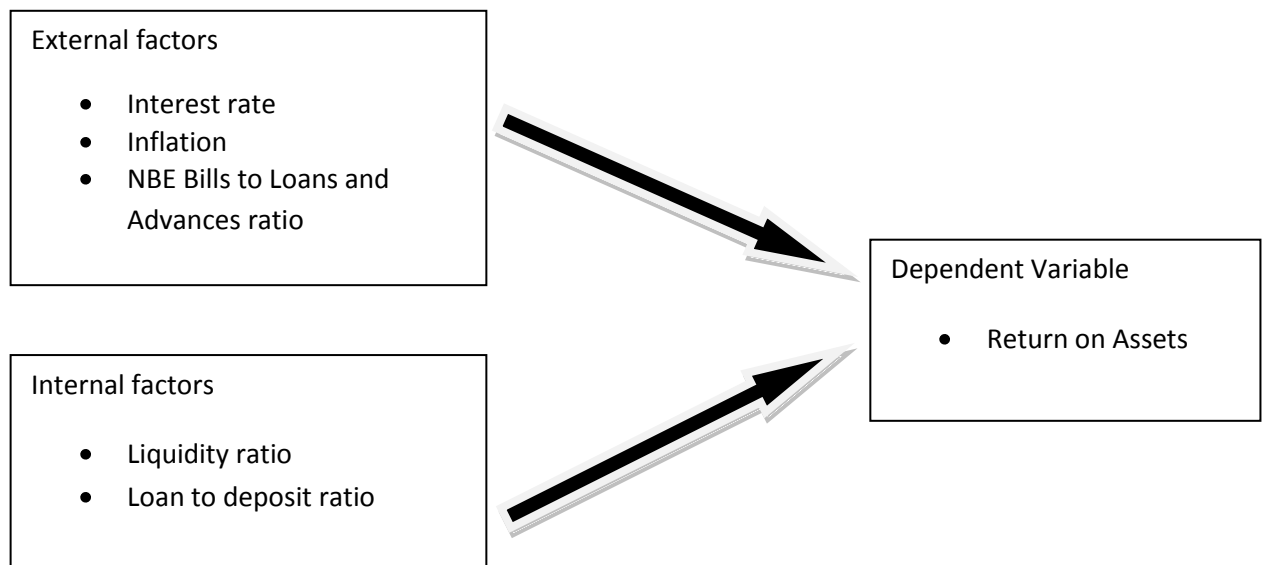


Figure 2.1: Conceptual Framework

Overall, the framework shows the internal and external factors as the independent variables and bank profitability, which is expressed as Return on Asset as the dependent variable.

2.4.1. Definition of Terms

For the purpose of this paper,

- i. **Interest rate:** refers to the cost of fund that will be incurred by commercial banks while mobilizing deposits. In fact, the minimum rate of saving deposit is determined by NBE.
- ii. **Annual Inflation rate:** it measures the overall percentage increase in consumer price indices for all goods and services. considering the findings of previous studies (e.g. Demircuc-Kunt and Huizinga, 1999), proposed a positive association between inflation and bank profitability. In consideration of this, the study is expected to show a positive relationship between inflation rate and performance of the private commercial banks.

- iii. NBE Bills.** According to National Bank of Ethiopia, NBE Bill refers to the long term obligation of the National Bank of Ethiopia having a maturity period of 5 years, an interest rate of 3 percent per annum and interest accrued on the bills payable on an annual basis.
- iv. Liquidity ratio:** here liquidity was measured as the ratio of liquid assets to total current liabilities.
- v. Loans to Deposit Ratio:** the ratio of credit to deposits may give indications of the ability of the bank to mobilize deposits to meet credit demand. This indicates the degree to which a bank can support its core lending business through its deposits.
- vi. Return on Assets (ROA):** shows how profitable a company's assets are in generating revenue. Return on assets is computed as net income divided by average total assets.

Chapter Three

3. Research Design and Methodology

In this section the researcher will demonstrate the methodology which it will use for this paper. The section will present the research design, the sample and sampling procedure, data collection and analysis methods that will be used in conducting the study. On top of this, the type of model and the components of the model meaning both the dependent and the independent variables together with model specification will be explained.

3.1. Research Design

The general objective of this study will be investigating the impact of liquidity on profitability of Nib International Bank S.C. To conduct the research, a mixed use approach will be employed. The use of such mixed approach would substantiate and validate the finding from different data sources. The researcher will use both primary and secondary sources of data. In line with this, the study will use inferential statistical tool such as regression to analyze the secondary data while descriptive statistical tools will be used for analysis of the primary data.

3.2. Sample Size and Sampling Techniques

The researcher used purposive sampling technique while collecting primary data. In this regard, all members of Asset Liability Management Committee (ALCO) and selected staff members of Accounts and Finance Department, Treasury and Fund Management Department and Risk & Compliance Management Department of the Bank were considered for the study.

3.3. Sources and Tools of Collection

The study will use both primary and secondary source of data. In order to assess whether the bank use any liquidity measures and the effectiveness of those measures, primary data will be collected through questionnaires which will be administered to the sample respondents. On the other hand, the audited annual financial statements of the Bank will be used in order to gather the required secondary data to investigate the relationship that prevails between liquidity and profitability of the Bank as well as to find out the extent to which liquidity affects profitability of the Bank. On top of this, annual reports of NBE will be used to evaluate the effect of external factors on performance of the Bank.

3.4.Data Analysis Method

The study will use multiple regression technique to analyze the secondary data which will be collected from the Bank's audited financial statements. This method was chosen due to the nature of the data which comprise of time-series elements reflected by the period of study (1999-2015). Data collected from the primary sources will be analyzed with the use of descriptive statistical tools such as tables, graphs, percentages, etc.

3.5.Description and Measurement of Variables

3.5.1. Dependent Variable

Return on Assets (ROA) shows how profitable a company's assets are in generating revenue. Return on assets is computed as net income divided by average total assets.

$$ROA = \frac{Net\ Income}{Average\ Total\ Assets}$$

This percentage shows what the company can do with what it has (i.e., source of fund derived from equity financing as well as debt financing). This is in contrast to return on equity, which measures a firm's efficiency at generating profits from every unit of shareholders' equity. As a result, the researcher selected ROA over ROE as a measure of performance in this particular study.

3.5.2. Independent Variables

a) Internal Variables

- i. **Liquidity ratio (LIQ1):** here liquidity was measured as the ratio of liquid assets to total current liabilities.

$$LIQ1 = \frac{Liquid\ Assets}{Current\ Liabilities}$$

- ii. **Loans to Deposit Ratio (LIQ2):** the ratio of credit to deposits may give indications of the ability of the bank to mobilize deposits to meet credit demand. This indicates the degree to which a bank can support its core lending business through its deposits.

$$LIQ2 = \frac{\text{Gross Loans and Advances}}{\text{Total Deposit}}$$

b) External Variables

- i. **Interest rate:** refers to the cost of fund that will be incurred by commercial banks while mobilizing deposits. In fact, the minimum rate of saving deposit is determined by NBE.
- ii. **Annual Inflation rate (INF):** it measures the overall percentage increase in consumer price indices for all goods and services. considering the findings of previous studies (e.g. Demirguc-Kunt and Huizinga, 1999), proposed a positive association between inflation and bank profitability. In consideration of this, the study is expected to show a positive relationship between inflation rate and performance of the private commercial banks.
- iii. **NBE Bills purchase (NBE):** it is the ratio of NBE Bills to net loans and advances.

$$\text{NBE Bills} = \frac{\text{NBE Bills Purchased}}{\text{Net Loans and Advances}}$$

3.6. Model Specification

Summarizing the results from numerous studies; Liquidity ratio and loan to deposit ratio (Adebayo et.al. 2011 and Oblior, 2013) were taken as internal factors affecting banks performance. On the other hand; Gross Domestic Product, inflation rate, interest rate and NBE Bills to Net Loans and Advances ratio were among the external factors that can affect the performance of a particular bank (Alper and Anbar, 2011; Naceur, 2003; Kaya, 2002 and Nahom, 2015). Hence, the model will be as follows:

$$Y_{it} = \alpha_i + \beta_1 X1_t + \beta_2 X2_t + \varepsilon_t \quad \text{where } t=1, \dots, T$$

Y_{it} represents the dependent variables: ROA at time t ; α_i is the constant or slope intercept; $X1_t$ represents the Bank specific factors: liquidity ratio and loan to deposit ratio at time t ; $X2_t$ represents the Macroeconomic factors: annual inflation rate, interest rate and NBE Bills to Net Loans and Advances ratio at time t ; β_1 and β_2 are respective coefficients for the

independent variables and ε_t is the error term which will be used to capture any variation not captured by the model.

The assumptions to be tested in the regression analysis will include; Normality, Linearity, Multicollinearity, and Homoscedasticity tests.

Chapter Four

4. Results and Discussion

In the preceding chapters important literatures relating to the topic were reviewed that gives adequate understanding about the topic and used to identify knowledge gap on the area. To meet the broad research objective and to answer research questions the research design used for this study was also discussed in the preceding chapter.

As stated in chapter one the broad objective of this study was to identify the impact of liquidity of NIB on its profitability. Further, as noted in the previous chapters in order to achieve this broad objective the study developed the following four research questions.

RQ1: Is there any relationship that prevails between liquidity and profitability of the Bank?

RQ2: What is the level of effect of liquidity on profitability of the Bank?

RQ3: What are the external factors that affect performance of the Bank?

RQ4: What is the level of effectiveness of the Bank's liquidity measurement tools?

In this chapter the data collected through primary and secondary sources were presented and important correlation and regression analysis findings were discussed. The current chapter has six sections. Under the first section, (section 4.1) the primary data gathered through questionnaires is analyzed. In section 4.2 the descriptive statistics of the dependent and independent variables are presented followed by correlation analysis under section 4.3. Section 4.4 presents the test for the classical liner regression model/CLRM. Then, the results of the regression analysis are presented under section 4.5. Finally, discussions for the results of the regression analysis are made under section 4.6.

4.1. Assessment of Applicability and Effectiveness of the Bank's Liquidity Measurement Tools

In this section primary data gathered from Asset Liability Committee (ALCO) members, staff members of Accounts and Finance Department, Treasury and Fund Management Department and Risk and Compliance Management Department of the Bank through questionnaires that were distributed in a purposive sampling technique, was analyzed and discussed.

Section I: Personal Profile of respondents

Table 4.1: Respondents` profile

Question	Particulars	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Level of Education	Diploma	0	0.0%	
	First Degree	20	66.7%	66.7%
	Masters & above	10	33.3%	100.0%
Work experience	< 1 year	5	16.7%	16.7%
	1 – 5 years	10	33.3%	50.0%
	6 – 10 years	10	33.3%	83.3%
	11 – 15 years	5	16.7%	100.0%
Position	Managerial	5	16.7%	16.7%
	Supervisory	0	0.0%	16.7%
	Professional	20	66.7%	83.3%
	Clerical	5	16.7%	100.0%
Gender	Male	25	83.3%	83.3%
	Female	5	16.7%	100.0%
Age Group	18-29	15	50.0%	50.0%
	30-39	5	16.7%	66.7%
	40-49	10	33.3%	100.0%
	≥ 50	0	0.0%	100.0%
Total		30	100.00%	

Source: Survey result and own computation.

The above table 4.1 shows summary of the respondents' profile. Thus, concerning the educational qualification of respondents, 66.7% of them are 1st degree holders and the remaining 33.3% have Masters and above.

In relation to work experience of the respondents, those having banking experience of less than 1 year and 11-15 years had equal percentage share of 16.7% each. Similarly, those respondents having an experience of 1-5 years and 6-10 had also equal percentage share of 33.3% each.

Section II: Assessment of Liquidity measurement tools of the Bank

How do you evaluate the effectiveness of the overall liquidity measurement tools of the Bank?

Table 4.2 Effectiveness of overall liquidity measurement tools

Particulars	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Very Good	5	16.7%	16.7%
Good	15	50.0%	66.7%
Satisfactory	10	33.3%	100.0%
Poor	0	0.0%	100.0%
Total	30	100.0%	

Source: Survey result and own computation.

While asking participants regarding the overall effectiveness of liquidity measurement tools, it is found out that half of the total respondents believe that the effectiveness of the overall liquidity measurement tools of the Bank is good. On the other hand 16.7% and 33.3% of the respondents replied that the effectiveness of the overall liquidity measurement tools of the Bank is very good and satisfactory, respectively. However, no respondents replied that the effectiveness of the overall liquidity measurement tools of the Bank is poor.

Generally, 66.7% of the respondents agreed that the overall effectiveness of liquidity measurement tools is at acceptable level.

How do you rate the degree of applicability of the following liquidity measurement tools of the Bank?

Regarding the inquiry to know about the most important instruments/ techniques used by the bank for managing liquidity, the response obtained is presented in Table 4.3 below. It shows that 33.3% of the respondents argued that “Prudential Limits” of Reserve requirement ratio and Liquidity ratio are highly applied as a liquidity measurement tools while 33.3% and 50% responded as Reserve requirement ratio and Liquidity ratio are applied moderately and the remaining number of the participants unfavourably replied towards the applicability of limits in the Bank. Similarly, each of one-third (i.e. 33.3%) of the respondents replied that among

the Ratios (i.e. Loan to deposit ratio, Prime Asset to total asset ratio and Time Deposit to Total deposit ratio) are highly applied, moderately applied and satisfactorily applied, respectively. On the other hand, 33.3%, 50% and 16.7% of the respondents agrees that the remaining ratios (i.e. Core deposit to Total deposit ratio, Foreign deposit to Liquid asset ratio and Top 20 depositors to Total deposit) are highly applied, moderately applied and less applied, respectively. The study also indicated that each one-third (i.e. 33.3%) supported “Cash flow Analysis” was highly applied, moderately applied and less applied, respectively. The use of Maturity Gap Analysis as a tool for liquidity measurement tool is responded as highly applied by 16.7% of the respondents while it was moderately applied, as per the responses of 33.3% and the remaining respondents (50%) indicated that it is less applied. It was also found out that a 16.7% and 33.3% replied that Stress Testing Analysis / Sensitivity Analysis are used highly and moderately whereas about 33.3% and 16.7% of the respondents argued that these tools are less applied and not used at all, respectively.

Table 4.3 Applicability of liquidity measurement tools

Instruments/Techniques	Highly applied	Modestly applied	Less applied	Not used at all
	Relative Frequency	Relative Frequency	Relative Frequency	Relative Frequency
Prudential Limits:				
Reserve Requirement Ratio	33.3%	33.3%	33.3%	0.0%
Liquidity Ratio	33.3%	50.0%	16.7%	0.0%
Maturity Gap Analysis	16.7%	33.3%	50.0%	0.0%
Ratios:				
Loan to Deposit Ratio	33.3%	33.3%	33.3%	0.0%
Prime Asset to Total Asset Ratio	33.3%	33.3%	33.3%	0.0%
Core Deposit to Total Deposit Ratio	33.3%	50.0%	16.7%	0.0%
Time Deposit to Total Deposit Ratio	33.3%	33.3%	33.3%	0.0%
Foreign Deposit to Liquid Asset Ratio	33.3%	50.0%	16.7%	0.0%
Top 20 Depositors to Total Deposit Ratio	33.3%	50.0%	16.7%	0.0%
Stress Testing & Sensitivity Analysis	16.7%	33.3%	33.3%	16.7%
Cash flow forecast	33.3%	33.3%	33.3%	0%

Source: Survey result and own computation.

As per the forgoing analysis it was found out that the bank used more than one instrument/technique for measuring liquidity, however, the study showed that Prudential Limits, Ratio Analysis and Cash Flow Forecast Analysis are tools that are relatively highly applied in the bank followed by, Maturity Gap Analysis and Stress Testing analysis.

In general, more than two-third of the respondents replied that the liquidity measurements are applied in the Bank.

How do you evaluate the effectiveness of the following liquidity measurement tools of the Bank?

Table 4.4 Effectiveness of liquidity measurement tools

Instruments/Techniques	Very Good	Good	Satisfactory	Poor	Very Poor
Prudential limits:					
Reserve Requirement Ratio	33.3%	66.7%	0.0%	0.0%	0.0%
Liquidity Ratio	16.7%	83.3%	0.0%	0.0%	0.0%
Maturity gap analysis	16.7%	50.0%	33.3%	0.0%	0.0%
Ratios:					
Loan to Deposit Ratio	33.3%	33.3%	33.3%	0.0%	0.0%
Prime Asset to Total Asset Ratio	16.7%	66.7%	16.7%	0.0%	0.0%
Core Deposit to Total Deposit Ratio	0.0%	83.3%	16.7%	0.0%	0.0%
Time Deposit to Total Deposit Ratio	0.0%	50.0%	50.0%	0.0%	0.0%
Foreign Deposit to Liquid Asset Ratio	0.0%	83.3%	16.7%	0.0%	0.0%
Top 20 Depositors to Total Deposit Ratio	0.0%	66.7%	33.3%	0.0%	0.0%
Stress Testing & Sensitivity Analysis	16.7%	16.7%	50.0%	16.7%	0.0%
Cash flow forecast	16.7%	16.7%	50.0%	16.7%	0.0%

Source: Survey result and own computation.

Linked to the above discussion respondents were also asked to evaluate the effectiveness of each liquidity measurement tools. In this regard, 33.3% and 16.7% of the respondents replied the effectiveness of the limits (i.e. Reserve requirement and Liquidity ratios) as Very Good, respectively. However, the remaining respondents 66.7% and 83.3% rated the limits as Good, respectively. Among the liquidity measurement ratios, Loan to deposit ratio was rated as Very Good, Good and Satisfactory by each one-third (i.e. 33.3%) of the respondents. The

effectiveness of Prime asset to total asset ratio was rated as Very Good (16.7%), Good (66.7%) and Satisfactory (16.7%). on the other hand, the outcome of the analysis suggests that respondents rated Foreign deposit to Liquid asset and Core Deposit to Total deposit ratios as Good (83.3%) and Satisfactory (16.7%). The other ratio, which is Time deposit to Total deposit was rated by respondents as Good (50%) and Satisfactory (50%). The effectiveness of Foreign deposit to Liquid asset and Top 20 depositors to Total deposit ratios was rated as Good, by (83.3%) and (66.7%) of the respondents ,respectively while the rest 16.7% and 33.3% rated as Satisfactory. Generally, there is no ratio of the Bank are rated as Poor and Very poor as to their effectiveness.

About % of respondents rated Maturity Gap effectiveness as Very Good (16.7%), Good (50%) and Satisfactory (33.3%). Likewise, the stress testing measurement and its effectiveness rated as Satisfactory by 50 % of the respondents where as 33.3% of the participant were in favour of its effectiveness. Lastly, large percentages of respondents (50%) were of the opinion that Cash flow technique is satisfactorily effective liquidity measurement tool.

Form the forgoing data presentation it was learnt that the bank used almost all of the techniques mentioned thereof, however, with different level of importance towards measuring liquidity. Thus, Prudential Limits Ratios, and Maturity Gap Analysis were found very important in their order of presence, followed by Cash flow forecast and Stress Testing techniques.

Generally, apart from stress testing & sensitivity analysis and the cash flow forecast techniques, all the liquidity measurement tools are considered to be effective measure of liquidity in the case of NIB.

4.2. Descriptive Statistics of Variables

In the descriptive statistics, important observations related to the dependent and independent variables has been made. The dependent variable is profitability which is measured by return on asset (ROA) and the independent variables are liquidity, measured by Liquidity Ratio (LIQ1) and Loan to Deposit Ratio (LIQ2), and other external variables such as NBE Bills (NBE), Deposit Interest Rate (IR), and Inflation (INF). Table 4.5 below presents the descriptive statistics of the dependent and independent variables.

Table 4.5 descriptive statistics of dependent and independent variables

	Observations	Minimum	Maximum	Mean	Standard Deviation
ROA	16	0.014650	0.040610	0.029679	0.007625
LIQ1	16	0.181200	0.667580	0.414751	0.147448
LIQ2	16	0.623530	0.867240	0.770841	0.078888
NBE	16	0.000000	0.539280	0.126028	0.202674
IR	16	0.030000	0.060000	0.042500	0.010646
INF	16	-0.106000	0.364000	0.120513	0.120766

Source: Financial statements of NIB and own computation through SPSS

The mean value of ROA was 2.9%. The value of standard deviation (i.e. 0.8%) indicated that there was minimal dispersion from the mean value of ROA in the case of Nib International Bank.

Liquidity measures banks ability to fund increases in assets and meet obligations as they come due, without incurring unacceptable costs. The mean value of LIQ1 was 41.5% that was above the NBE's requirement of 15% commencing from 1st October, 2014 (NBE Directives No. SBB/57/2014). The standard deviations of 14.7% showed higher dispersion of liquid assets to total liabilities ratio from its mean for NIB. The maximum and minimum values of LIQ1 were 66.7% and 18.1% respectively.

The mean value of loan to deposit ratio, LIQ2 was 77.1% that is slightly higher than the international standard for loans to deposit ratio of 75% (CBRC 2012). This indicated on average for Nib International Bank higher amount of volatile liabilities (deposits) were tied up with illiquid loans. There was relatively low dispersion of LIQ2 towards its mean value during the 16 years of operation under consideration by the standard deviation of 7.9%. The maximum value of LIQ2 was 86.7% which is above the standard whereas the minimum value was 62.4% which is below the standard.

The remaining independent variables were the macroeconomic indicators that can affect banks performance in general. The mean value of NBE Bills to Net loans ratio was 12.6%.

The standard deviation for NBE Bills was 20.3% which implies higher dispersion from its mean. This is mainly due to the directive for the bills purchase was enacted before five years and same data were taken in to consideration. The maximum value for NBE Bills to Net loans ratio was 53.9% and the minimum value was 0%. On top of this, the maximum annual inflation rate was recorded in the year 2010 (i.e. 36.4%) and the minimum was in the year 2002 (i.e. -10.6%). The rate of inflation was somehow highly dispersed over the periods under study towards its mean with standard deviation of 12.1%.

The other macroeconomic factor was related with interest rate for saving deposits. The mean value of the saving interest rate over the period was 4.3% with the maximum and minimum values of 6% and 3% respectively. There was relatively lower variation of saving interest rate towards its mean value over the periods under study with the value of standard deviation 1.1%.

4.3.Results for Pearson Correlation Coefficient

Pearson's Correlation analysis is used for data to see the relationship between variables such as those between independent variables and profitability of the bank. Table 4.6 next page depicts the Pearson Correlation for the variables used in the regression model. This analysis is performed to find the relationship between liquidity and profitability of NIB and among other variables used in the study.

Table 4.6 Correlation matrix

		ROA	LIQ1	LIQ2	NBE	IR	INF
Pearson Correlation	ROA	1.00					
	LIQ1	.242	1.00				
	LIQ2	-.114	-.019	1.00			
	NBE	.251	-.430	-.746**	1.00		
	IR	-.104	.146	-.736**	.467	1.00	
	INF	.690**	.307	-.254	.176	.119	1.00
Sig. (2- tailed)	ROA		.366	.675	.348	.702	.003
	LIQ1	.366		.495	.096	.590	.248
	LIQ2	.675	.495		.001	.001	.342
	NBE	.348	.096	.001		.068	.514
	IR	.702	.590	.001	.068		.660
	INF	.003	.248	.342	.514	.660	
N	ROA	16	16	16	16	16	16
	LIQ1	16	16	16	16	16	16
	LIQ2	16	16	16	16	16	16
	NBE	16	16	16	16	16	16
	IR	16	16	16	16	16	16
	INF	16	16	16	16	16	16

Source: Financial statements of NIB and own computation through SPSS

** . Correlation is significant at the 0.01 level (2-tailed).

In the above correlation matrix, the correlation coefficient between the dependent and independent variables shows liquidity ratio (LIQ1), NBE Bills to Net Loans ratio(NBE) and Inflation rate (INF) are positively correlated with return on asset (ROA) with value of .242, .242, .251 and .690, respectively. The correlation between ROA with annual inflation rate was significant at 1% significance level. On the other hand loan to deposit ratio (LIQ2) and deposit interest rate (IR) are negatively correlated with return on asset (ROA) with value of -.114 and -.104.

As presented in table 4.4 above, liquidity ratio (LIQ1) had a positive correlation coefficient with deposit interest rate (IR) and inflation rate (INF) with coefficients of .146 and .307 respectively. But liquidity ratio had a negative correlation coefficient value of -.019 and -.430

with loan to deposit ratio and NBE Bills purchase respectively. Loan to deposit ratio had a negative correlation coefficient value of $-.746$, $-.736$ and $-.254$ with NBE Bills, deposit interest rate and inflation rate, respectively. The correlation between loan to deposit ratio and NBE Bills and inflation rate was significant at 1% significance level. The correlation between NBE Bills purchase with deposit interest rate and annual inflation rate had positive correlation coefficient value of $.467$, and $.176$, respectively. At last, the deposit interest rate was positively correlated with the general inflation rate with coefficient value of $.119$.

As a result, the study found out that liquidity and profitability of the Bank, which is expressed by ROA, are positively correlated.

4.4. Analysis for Testing the Assumptions of Classical Regression Model (CLRM)

Four tests for CLRM assumptions namely normality, linearity, homoscedasticity, and multi co- linearity are conducted and discussed as follows.

4.4.1. Analysis for Test of Normality

The most fundamental assumption in statistical analysis is normality, referring to the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution, the benchmark for statistical methods.

Skewness and kurtosis test of Normality:

Kurtosis is the peakedness of a distribution. On the other hand, Skewness explains the symmetry towards the center or lack of it in a distribution. A common test for normality is to run descriptive statistics to get skewness and kurtosis, then use the criterion that kurtosis should be within the $+2$ to -2 range when the data are normally distributed. (<http://www.statisticalassociates.com/assumptions>)

Table 4.7 Skewness and Kurtosis test of Normality

Descriptives		Statistic	Standard Error
Standardized Residual	Skewness	-.096	.564
	Kurtosis	-.653	1.091

Source: Financial statements of NIB and own computation through SPSS

The result presented in table 4.7 above shows that values of Skewness and Kurtosis of the standard error term are .564 and 1.091, respectively. Both values are within the range of -2 and 2. Thus, normality assumption is not violated.

Shapiro-Wilk test of Normality:

To further test the normality of the secondary data, the study used Shapiro-Wilk, W test. It is a standard test of normality for small and medium sample up to $n=2000$ (Testing Statistical Assumptions - 2012 edition). When $W=1$, the given data are perfectly normal in distribution. However, when it is significantly smaller than 1, the assumption of normality is not met.

Table 4.8 Shapiro-Wilk's test of Normality

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	.152	16	.200*	.963	16	.719

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

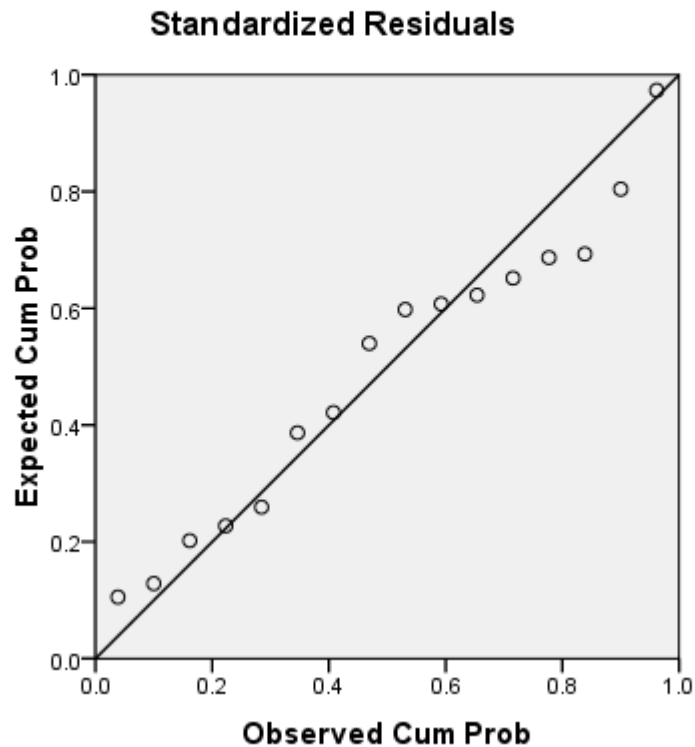
Source: Financial statements of NIB and own computation through SPSS

As can be exhibited in Table 4.8 above, the Shapiro-Wilk test of normality resulted in $W=.719$, which is not significantly far from 1. Thus, the assumption of normality of the data is still not violated.

4.4.2. Analysis for Test of Linearity

To fulfil the assumption of linearity the residuals should have a straight line relationship with predicted dependent variable scores. This assumption can be checked by inspecting the normal probability plot (PP) of the regression standardized residuals. In the plot if the points lie in a reasonably straight diagonal line from bottom left to top right, the assumption of linearity is not violated. Accordingly, the following chart (figure 4.1) justifies that this assumption is not violated.

Figure 4.1 Test of linearity

Normal P-P Plot of Regression Standardized Residual**ANOVA test of Linearity**

In accordance with Testing Statistical Assumptions - 2012 Edition, using the F- significance value of ANOVA table linearity of the variables can be tested. Thus, for the linear and non-linear components of any pair of variables having F-significance value below ($< .05$), then there is significant nonlinearity. As a result, the study under consideration revealed ANOVA with F-significance value of .053, which indicated that there is absence of non-linearity among the variables.

4.4.3. Analysis for Test of Multicollinearity

This assumption is concerned with the relationship that exists between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity. According to Churchill and Iacobucci (2005), when there is multicollinearity, the amount of information about the effect of

explanatory variables on dependent variables decreases. As a result, many of the explanatory variables could be judged as not related to the dependent variables when in fact they are. This assumption does allow the independent variables to be correlated, however, cannot be perfectly correlated.

Multicollinearity occurs when independent variables are highly correlated with each other than with the dependent variable.

Different researchers quoted varied level of correlation coefficient that brings about multicollinearity problem. According to Hair et al (2006) if the correlation coefficient is above 0.9 this could cause multicollinearity problem and the results may not be reliable. In accordance with the correlation matrix on Table 4.6 (on page 31), all the correlation coefficients of independent variables against other independent variable were below 0.9. Thus, the multicollinearity assumption was not violated.

On the other hand, tolerance and Variance Inflation Factor (VIF) are also used to test existence of multicollinearity.

Table 4.9 Collinearity Statistics

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-0.017	0.041		-0.415	0.687		
LIQ1	0.029	0.015	0.557	1.930	0.028	0.379	2.636
LIQ2	0.047	0.041	0.486	1.131	0.285	0.172	5.829
NBE	0.034	0.016	0.907	2.180	0.045	0.183	5.471
IR	-0.218	0.197	-0.305	-1.108	0.294	0.417	2.396
INF	0.033	0.013	0.526	2.575	0.028	0.757	1.321

Source: Financial statements of NIB and own computation through SPSS

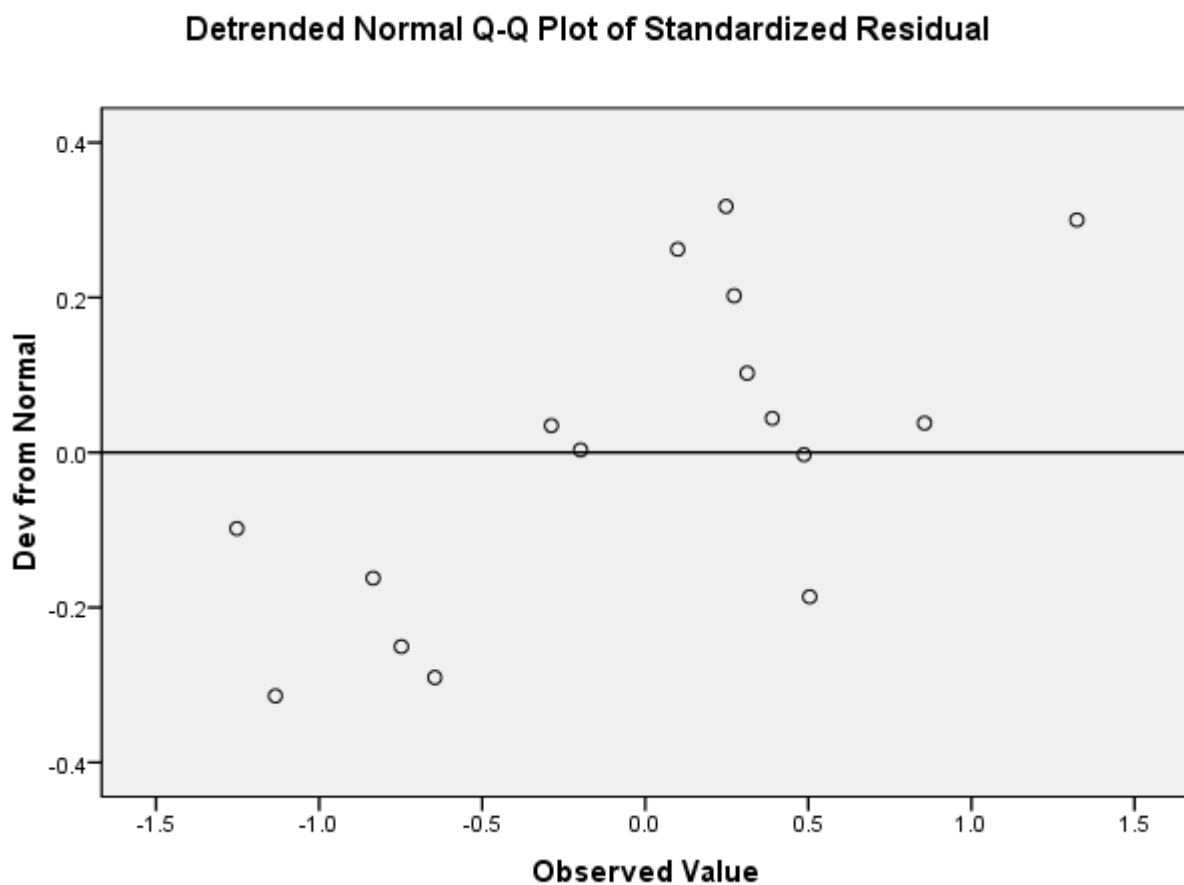
According to Research Consultation.com, the Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is $1/\text{Tolerance}$, it is always greater than or equal to 1. Values of VIF that exceed 10 are often regarded as indicating multicollinearity.

In this regard, as can be exhibited in the above table 4.8 that VIF value for all variables are below 10. Hence, this was also additional confirmation that the Multicollinearity assumption was not violated.

4.4.4. Analysis for Test of Homoscedasticity

Homoscedasticity refers to the assumption that the dependent variable exhibits similar amount of variance across the range of value for an independent variable. The assumption of homoscedasticity is not violated since the residuals are randomly scattered as can be observed in the figure 4.2 below.

Figure 4.2 Scatter plot



4.4.5. Results of the Regression Analysis

To examine the relationship between the Bank's profitability, which is expressed in terms of ROA, and explanatory variables, a regression analyses was run. This analysis was undertaken to investigate the relationship between NIB's profitability and the independent variables of the internal factors such as liquidity ratio and loan to deposit ratio and that of the external factors such as NBE Bills to Net Loans Ratio, deposit interest rate and Inflation. As per the preliminary analysis presented in section 4.4 above the assumptions for normality, linearity, homoscedasticity, and multicollinearity were not violated.

In the study, it is found out that the adjusted R^2 of the model was .521 with the $R^2 = .681$ that means the linear regression explains 68.1% of the variance in the data.

Table 4.10 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.825 ^a	.681	.521	.00527736	2.267

a. Predictors: (Constant), INF, IR, LIQ1, NBE, LIQ2

b. Dependent Variable: ROA

In accordance with Testing Statistical Assumptions, the Durbin-Watson statistic should be between 1.5 and 2.5 for independent observations. The study revealed that in Table 4-10 above the Durbin-Watson $d = 2.267$, which is between the two critical values of $1.5 < d < 2.5$ and therefore we can assume that there is no first order linear auto-correlation in the data.

In statistical testing of data, the p-value is a standard measure for reporting quantitative results. In general, a 5% or lower p-value is considered to be statistically significant. Accordingly, the multiple regression result suggested that the p-values of liquidity ratio (LIQ1), NBE Bills to Net loans ratio (NBE), and inflation rate was lower than 0.05. Hence, these explanatory variables are considered to be statistically significant. On the other hand, Loan to deposit ratio (LIQ2) and Deposit interest rate (IR) showed p-value above 0.05, as a result these two independent variables are found to be statistically insignificant.

The results of the multiple regressions for all independent variables are presented in Table 4.9 below. It indicated that the beta coefficient of Liquidity ratio, LIQ1 (.557), Loan to Deposit ratio, LIQ2 (.486), NBE Bills to Net loans ratio (.907), and annual inflation rate, INF (.526) had positive. However, the beta coefficient value of deposit interest rate, IR was negative, i.e. (-.305).

Table 4.11 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-.017	.041		-.415	.687
	LIQ1	.029	.015	.557	1.930	.028
	LIQ2	.047	.041	.486	1.131	.285
	NBE	.034	.016	.907	2.180	.045
	IR	-.218	.197	-.305	-1.108	.294
	INF	.033	.013	.526	2.575	.028

Source: Financial statements of NIB and own computation through SPSS

When evaluating the independent variables in the unstandardized coefficients column of Table 4.11 above the beta value of LIQ1, LIQ2, NBE, IR an INF is .029, .047, .034, -.218 and .033, respectively.

4.4.6. Discussion on Regression Results

Liquidity

The result of the regression analysis in Table 4.10 shows that there is a positive impact and significant relationship between liquidity ratio (LIQ1) and profitability as measured by Return on Asset (ROA). This implies that for each percentage increase in liquidity ratio, there is an increase in profitability of NIB by 55.7 %. The result is consistent with Adebayo et.al. (2011).

The finding in this study suggests that an increase in liquidity will result in better performance of Nib International Bank. This finding can be plausible if we consider that

when liquidity is effectively and efficiently managed i.e. when a commercial bank is able to meet its financial obligations timely and without incurring extra costs, the Bank's goodwill as well as market share will be improved. It can also avoid any extra cost of obtaining liquid assets to bridge the liquidity short fall. Thus, with higher market share in the industry and least possible cost of illiquidity, the Bank could improve its profitability.

Loan to Deposit Ratio

The second internal explanatory variable, loan to deposit ratio revealed a positive beta coefficient value for the model. However the result was statistically insignificant.

Though insignificant, the result of this study proposed that a continuous increase in loan to deposit ratio will result in a liquidity risk. It can be explained as much of the deposit, which has undefined maturity, changed to long term loans and advances, the maturity mismatch will be wider. Thus the probability of exposure to liquidity risk will be higher and this may result in cost of illiquidity. This in fact has adverse impact on profitability of commercial banks.

NBE Bills Purchase

Concerning NBE Bills, the regression result indicated that NBE Bills purchased has a positive impact on performance as measured by ROA in the case of NIB. This finding contradicts with a study conducted by Tesfaye (2014), which assessed the impact of policy measures on Ethiopian private banks performance by taking NBE Bills purchase as one policy issue. The researcher used a panel data from 2007 - 2013 of eight middle size private banks and found out that NBE Bills purchase has negative and significant relationship with performance of private banks. However, the findings of this study on the contrary revealed that NBE Bills ratio had a positive impact on profitability (ROA) of NIB.

The finding of the study suggests that an increase in NBE Bills purchase resulted in a better performance (ROA) in NIB. It may be due to the fact that idle fund was invested on the NBE Bills, which was not practiced before 5 years. In addition to this, the output of the study is also convincing from another perspective that the purchase of NBE Bills will have positive contribution to the economic progress of the nation, which in turn makes banks more profitable than before.

Deposit Interest Rate

The regression result of deposit interest rate indicated that this variable had a negative beta coefficient value. In addition, it was found to be statistically insignificant.

Annual Inflation Rate

The coefficient of inflation (INF) was positive and statistically significant, thus, the effect of inflation on NIB's profitability is significant. The result is similar with previous studies of Habtamu (2012) and Demirguc-Kunt & Huizinga (1999) showed a positive result and this implies that during the period of the study, inflations was anticipated which gave the bank an opportunity to adjust the interest rates accordingly, resulting in revenues that increased faster than costs, with a positive impact on profitability.

Chapter Five

5. Conclusions and recommendations

5.1. Conclusions

The aim of this research paper was to assess the impact of liquidity on profitability of Nib International Bank. To achieve the intended objective, the study used both primary and secondary data sources. Hence, the primary data was gathered through questionnaires using purposive sampling technique. Regarding the secondary sources, time series data was used that covered 16 years of operation from 1999 - 2015 i.e. starting from NIB's year of establishment until June 30, 2015, the end of 2014/15 budget year. The secondary data was based on the audited financial statements of the bank and basically the balance sheet and income statements of NIB are used. In addition to this, National Bank of Ethiopia's annual report was also inferred for gathering data related to macroeconomic variables.

The primary data was presented using descriptive statistics. The secondary data collected from the financial statements was converted to liquidity and profitability ratios based on the acceptable measurements. Then, it was further analyzed using the four correlation and regression techniques for the dependent (ROA) and independent variables (Liquidity ratio, Loan to deposit ratio, NBE Bills to Net Loans ratio, deposit interest rate and general inflation rate). The major findings of the study results from both primary and secondary data sources are presented as follows:

Descriptive analysis results revealed that the profitability measurement, ROA indicated that Nib International Bank has positive profit during the periods considered for this study. On average it earned 2.97 cents on each one birr value of assets.

Continuing to the explanatory variables of the model, liquidity ratio had mean value of 41.5. The mean value indicated that private commercial banks were in excess liquidity. This is because the mean value of 41.5 percent was near to three times higher than the supervisory minimum liquidity requirement of 15 percent. Loan to deposit ratio had the largest mean value of 76.9 among the independent variables, even higher than international standard of 75.

Before conducting the regression analysis the assumptions of the model were tested. The assumptions include test for normality, linearity, homoscedasticity and collinearity tests. As

per the test results all the assumptions are fulfilled. Also for the dependent variable ROA, R^2 was 68.1%. Thus, the linear regression explained 68.1% of the variance in the data.

The regression analysis is performed using independent variables of internal factors such as liquidity ratio (LIQ1) and loan to deposit ratio (LIQ2), and that of the external factors NBE Bills purchase (NBE), deposit interest rate (IR) and the general inflation rate (INF) of the country. The dependent variable taken was the profitability of the Bank, which is expressed as ROA.

Results of the regression model indicated that Liquidity ratio, NBE Bills and annual inflation rate had significant positive impact on profitability with 5% significance level. However, loan to deposit ratio and deposit interest rate had an inverse relation with insignificant impact on profitability of Nib International Bank.

Based on the results from the primary data, it has been found out that Nib International Bank used various liquidity measurement tools, which are applicable and effective in terms of liquidity measurement and management.

As per the results of both primary and secondary sources we can finally conclude that liquidity had significant impact on profitability of NIB, and existing liquidity measurement tools are applicable and effective in terms of liquidity measurement and management.

5.2. Recommendations

Based on the study findings, the following recommendations are forwarded:

- The Bank should adopt international standards in the liquidity management practice as it affects the overall performance;
- The Bank should provide adequate training to the concerned staff members as to the utilization and analysis on liquidity measurement tools;
- The Bank should introduce new liquidity measurement tools as per the current international practice;
- Decision is the day to day activities of management. In the current dynamic and competitive business environment timely information is mandatory. Thus, the Bank should have effective Management Information System (MIS) to provide relevant information and mitigate any potential liquidity risk;
- The Bank should broaden the deposit bases into the masses so as to minimize the expected concentrations and sudden deposit run-off;
- The bank should enhance coordination among Accounts and Finance Department, Treasury & Fund Management Department, Asset Liability Committee (ALCO) and other functional units;
- The ultimate responsible organ of the Bank is the Board of Directors. Thus, trainings related to liquidity management practices and the associated liquidity risk should be provided to BOD's members;

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Questionnaire
St. Mary's University
School of Graduate Studies

Dear Sir/ Madam

I have been undertaking Master of Business Administration (MBA) thesis work on the topic **“Impact of Liquidity on Profitability of Private Commercial banks; the case of Nib International Bank”**. The information supplied by you will be held in strict confidential manner and your answer will in no way jeopardize the status and security of your position. It will be utilized for academic purpose only.

I take this opportunity of thanking you in advance for your kind participation and timely return of your completed questionnaire.

If you have any queries, please contact me through my phone **No. 0911675236** or **E-mail sirakyifru2@gmail.com**

Thank you once again for assisting me in this survey.

Sincerely yours,

Section I: Personal Profile

1. What is your level of Education?
 - Diploma 1st Degree Master's & above
2. What is your level of current position in the bank?
 - Managerial Supervisory Professional Clerical
3. Gender:
 - Male Female
4. Age Group:
 - 18-29 30-39 40-49 ≥ 50
5. Years of service in the Bank:
 - < 1 1-5 6-10 11-15

Section II: Assessment of Liquidity Measurement tools of the Bank

6. How do you evaluate the effectiveness of the overall liquidity measurement tools of the Bank?
 - Very Good Good Satisfactory Poor
7. **Liquidity measurement techniques:** How do you rate the degree of applicability of the following liquidity measurement tools of the Bank? Please rate each of the following statement by putting a tick mark (\checkmark).

Instruments/Techniques	Highly Applied	Modestly Applied	Less Applied	Not used at all
Prudential limits				
Reserve Requirement Ratio				
Liquidity Ratio				
Maturity gap analysis				
Ratio analysis				
Loan to Deposit Ratio				
Prime Asset to Total Asset Ratio				
Core Deposit to Total Deposit Ratio				
Time Deposit to Total Deposit Ratio				
Foreign Deposit to Liquid Asset Ratio				
Top 20 Depositors to Total Deposit Ratio				
Stress Testing & Sensitivity Analysis				
Cash flow forecast				

8. How do you evaluate the effectiveness of the following liquidity measurement tools of the Bank?

Instruments/Techniques	Very Good	Good	Satisfactory	Poor	Very Poor
Prudential limits					
Reserve Requirement Ratio					
Liquidity Ratio					
Maturity gap analysis					
Ratio analysis					
Loan to Deposit Ratio					
Prime Asset to Total Asset Ratio					
Core Deposit to Total Deposit Ratio					
Time Deposit to Total Deposit Ratio					
Foreign Deposit to Liquid Asset Ratio					
Top 20 Depositors to Total Deposit Ratio					
Stress Testing & Sensitivity Analysis					
Cash flow forecast					

9. Please forward Issues that will improve the overall Liquidity measurement tools of the Bank?

Annexes

Ratios of Liquidity, Profitability and other macro-economic factors

Year	ROA	LIQ1	LIQ2	NBE	IR	INF
1999/2000	0.0146	0.5623	0.7052	0.0000	0.0600	0.0540
2000/01	0.0184	0.3984	0.7653	0.0000	0.0600	-0.0030
2001/02	0.0207	0.4555	0.8377	0.0000	0.0300	-0.1060
2002/03	0.0228	0.3404	0.8535	0.0000	0.0300	0.1009
2003/04	0.0288	0.2866	0.8645	0.0000	0.0300	0.0703
2004/05	0.0251	0.3638	0.8026	0.0000	0.0300	0.0610
2005/06	0.0301	0.2884	0.8472	0.0000	0.0300	0.1060
2006/07	0.0326	0.3604	0.8672	0.0000	0.0400	0.1580
2007/08	0.0406	0.5062	0.8456	0.0000	0.0400	0.2530
2008/09	0.0364	0.6676	0.7674	0.0000	0.0400	0.3640
2009/10	0.0373	0.5907	0.7569	0.0000	0.0400	0.0280
2010/11	0.0377	0.6494	0.7342	0.2036	0.0500	0.1810
2011/12	0.0372	0.4480	0.6235	0.3266	0.0500	0.3410
2012/13	0.0329	0.3024	0.6563	0.4207	0.0500	0.1350
2013/14	0.0315	0.2347	0.6871	0.4863	0.0500	0.0810
2014/15	0.0281	0.1812	0.7016	0.5393	0.0500	0.1040

Key: ROA -Return on Asset
LIQ1 - Liquidity Ratio
LIQ2 - Loan to Deposit Ratio
NBE -NBE Bills to Loan Ratio
IR -Deposit Interest Rate
INF -Annual Inflation Rate

Regression output

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	16	.01465	.04061	.0296785	.00762504
LIQ1	16	.18120	.66758	.4147512	.14744840
LIQ2	16	.62353	.86724	.7708411	.07888844
NBE	16	.00000	.53928	.1260279	.20267402
IR	16	.03000	.06000	.0425000	.01064581
INF	16	-.10600	.36400	.1205125	.12076581
Valid N (listwise)	16				

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.001	5	.000	4.325	.053 ^a
Residual	.000	10	.000		
Total	.001	15			

a. Predictors: (Constant), INF, IR, LIQ1, NBE, LIQ2

b. Dependent Variable: ROA

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.825 ^a	.681	.521	.00527736	2.267

a. Predictors: (Constant), INF, IR, LIQ1, NBE, LIQ2

b. Dependent Variable: ROA

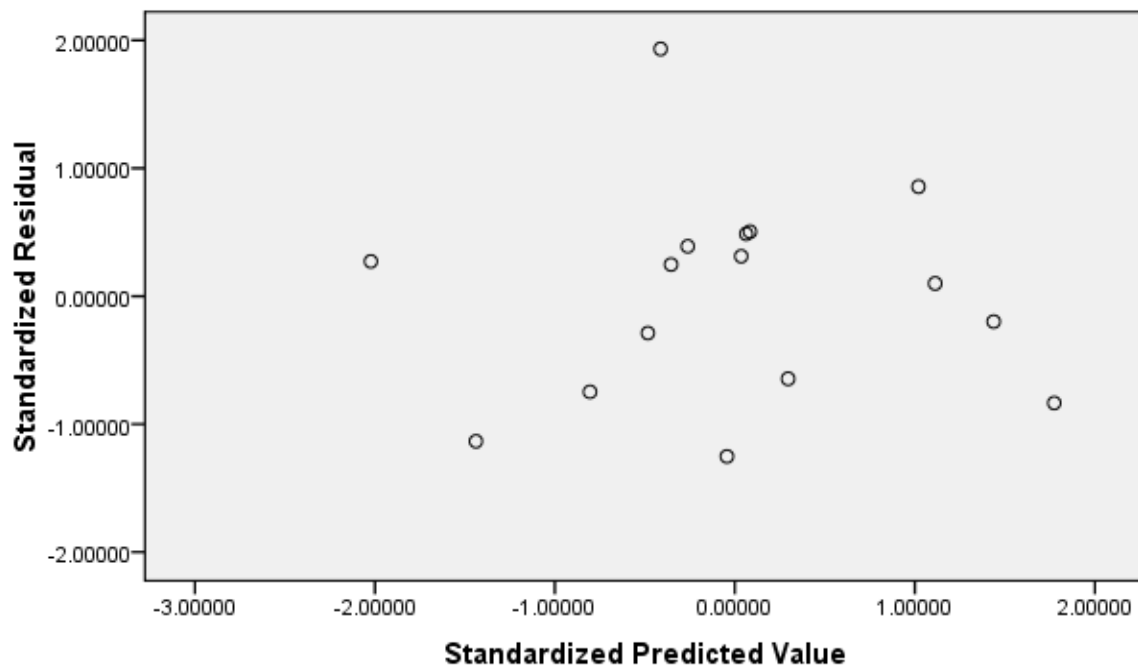
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.017	.041		-.415	.687		
	LIQ1	.029	.015	.557	1.930	.028	.379	2.636
	LIQ2	.047	.041	.486	1.131	.285	.172	5.829
	NBE	.034	.016	.907	2.180	.045	.183	5.471
	IR	-.218	.197	-.305	-1.108	.294	.417	2.396
	INF	.033	.013	.526	2.575	.028	.757	1.321

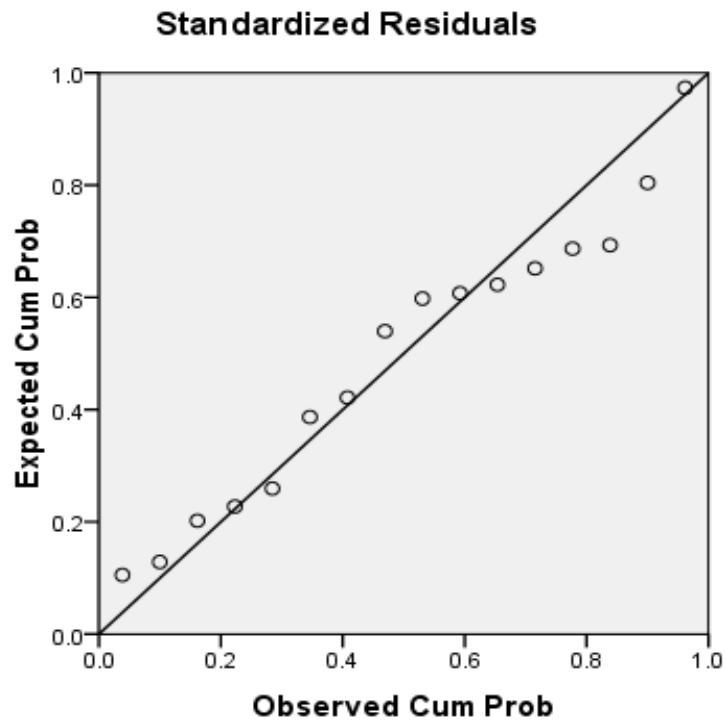
a. Dependent Variable: ROA

Scatter Plot

Scatter Plot of Residuals



Normal P-P Plot of Regression Standardized Residual



Collinearity Diagnostics^a

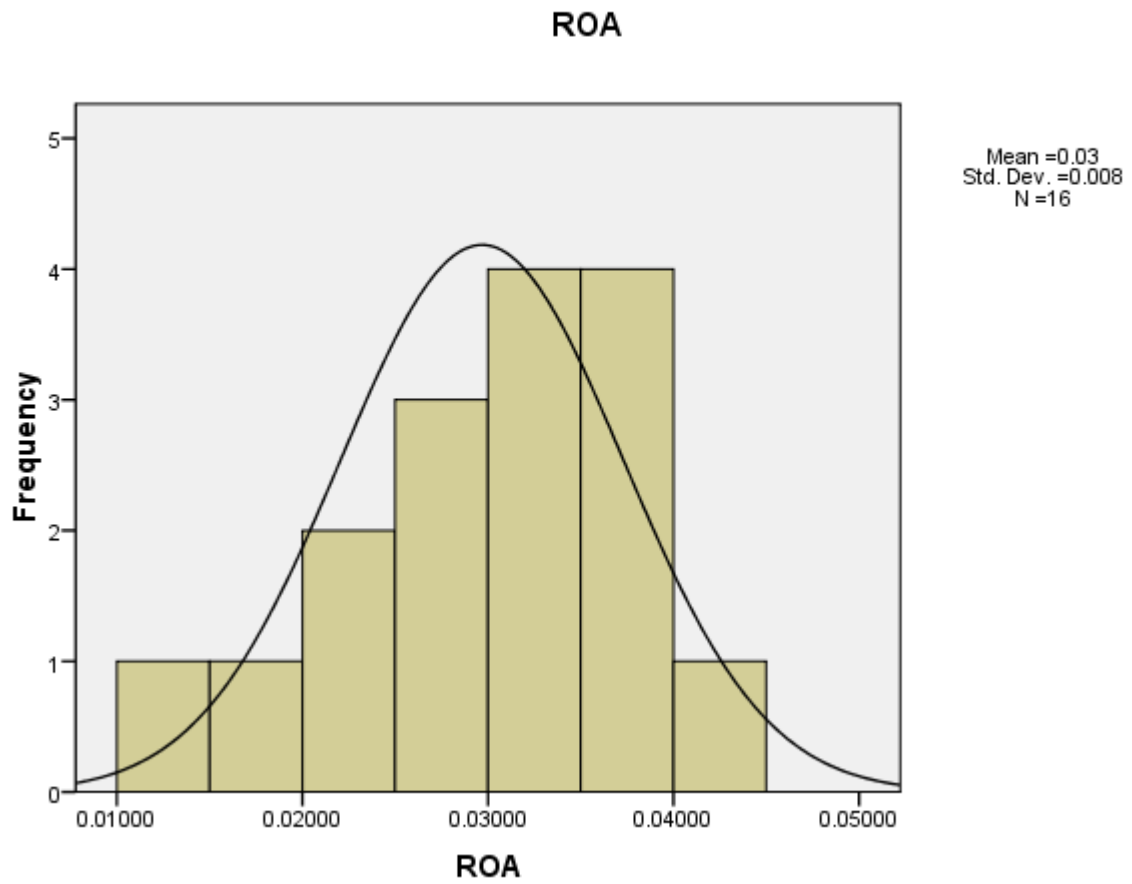
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	LIQ1	LIQ2	NBE	IR	INF
1	1	4.789	1.000	.00	.00	.00	.00	.00	.01
	2	.725	2.570	.00	.01	.00	.15	.00	.00
	3	.401	3.456	.00	.00	.00	.01	.00	.76
	4	.059	9.008	.00	.30	.01	.01	.04	.10
	5	.025	13.729	.00	.43	.00	.27	.58	.12
	6	.001	87.651	1.00	.26	.99	.57	.37	.00

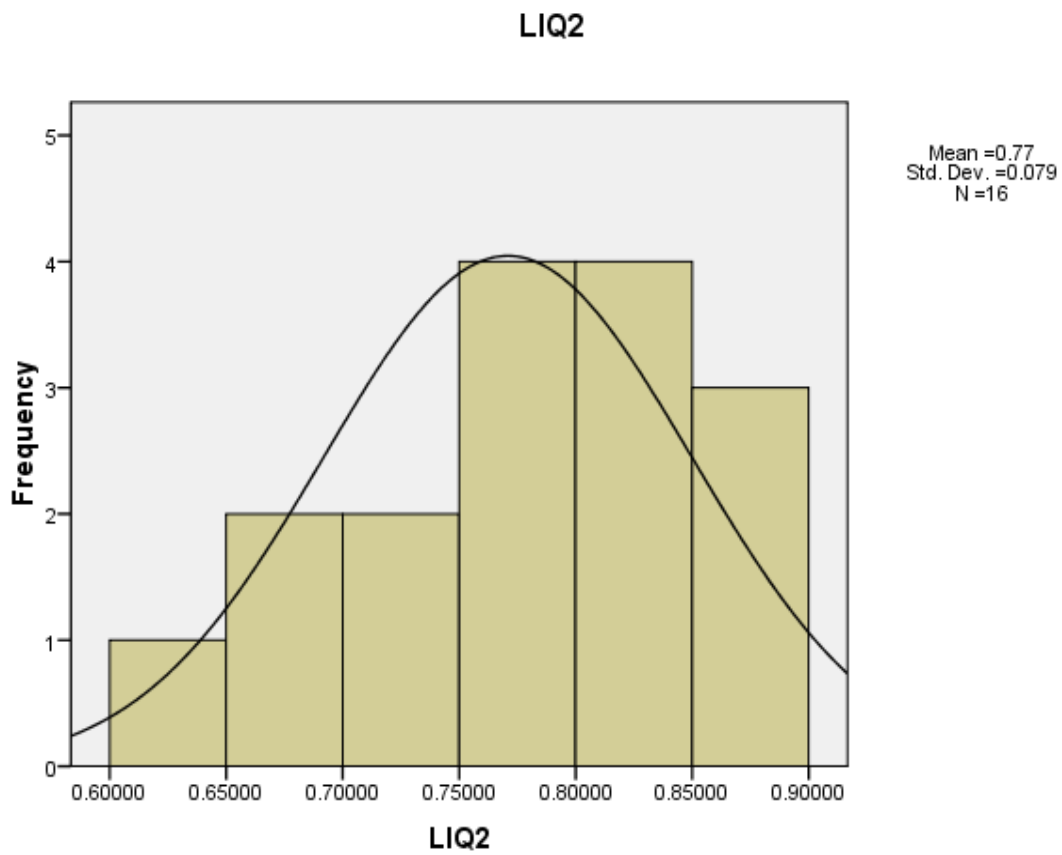
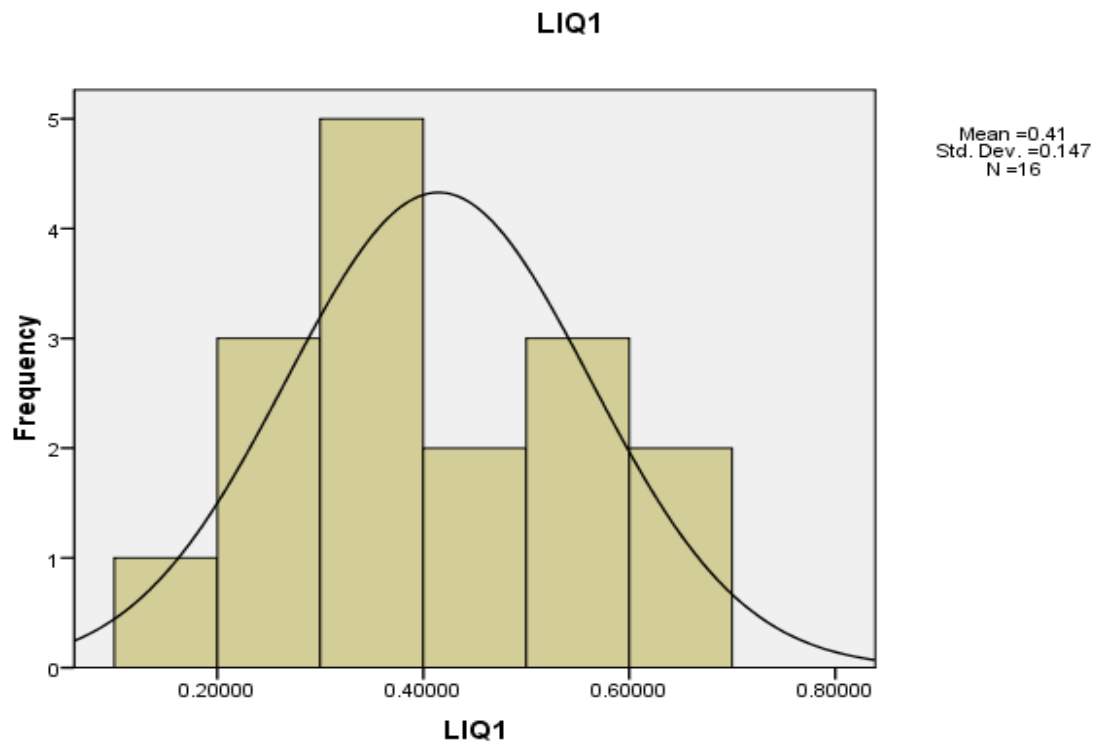
a. Dependent Variable: ROA

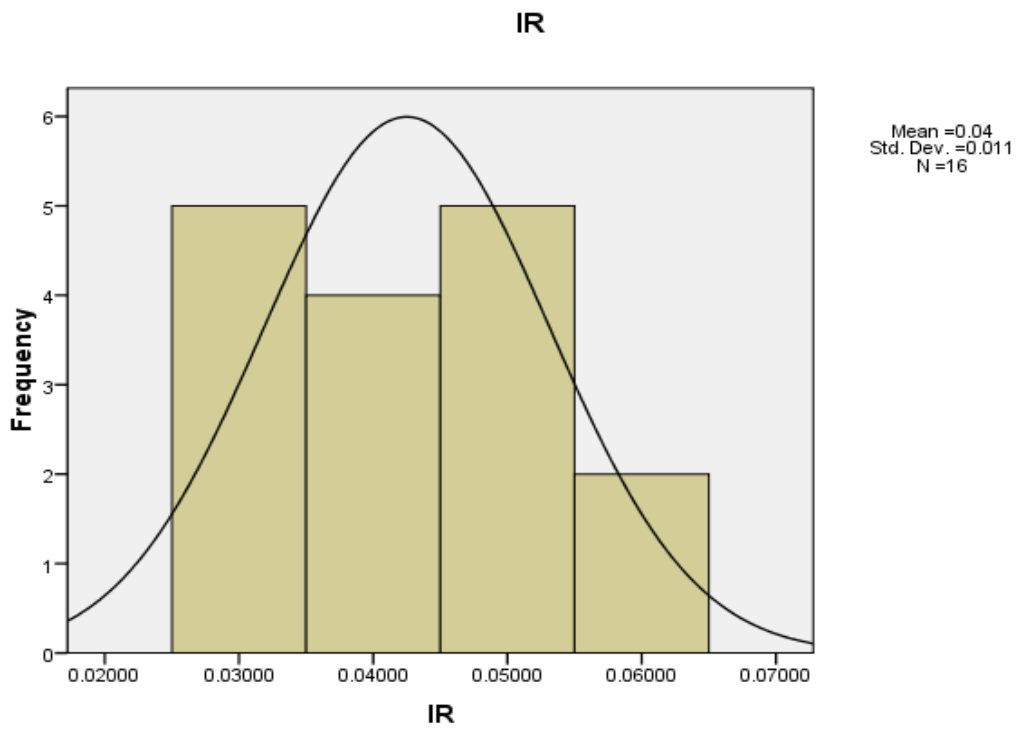
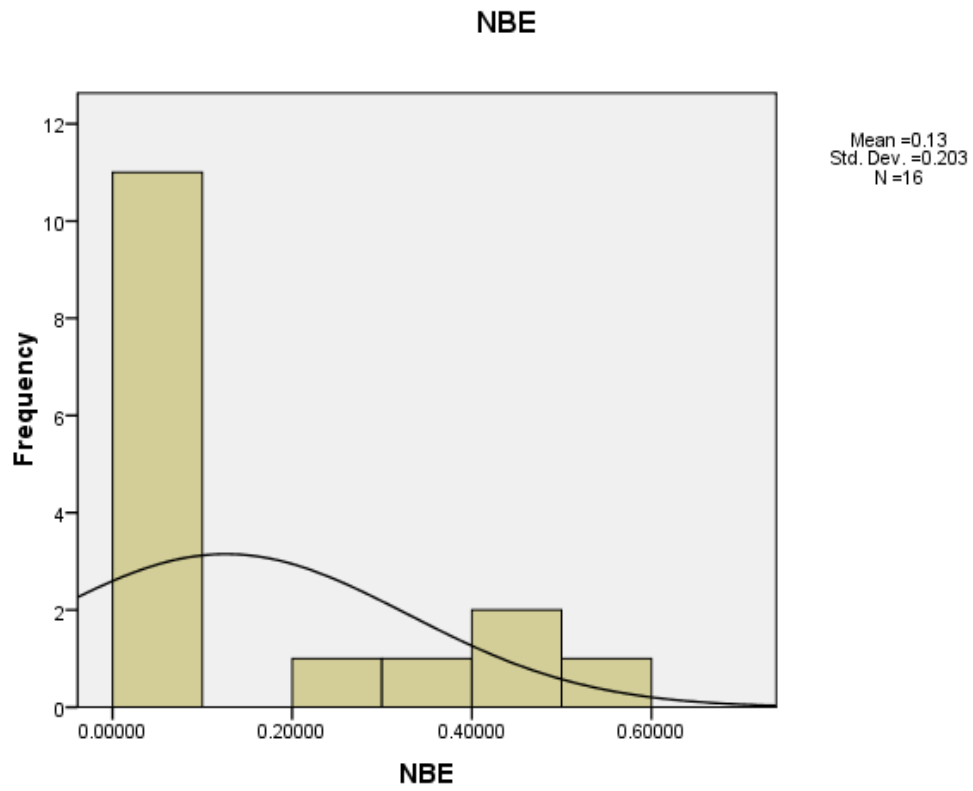
Descriptive Statistics

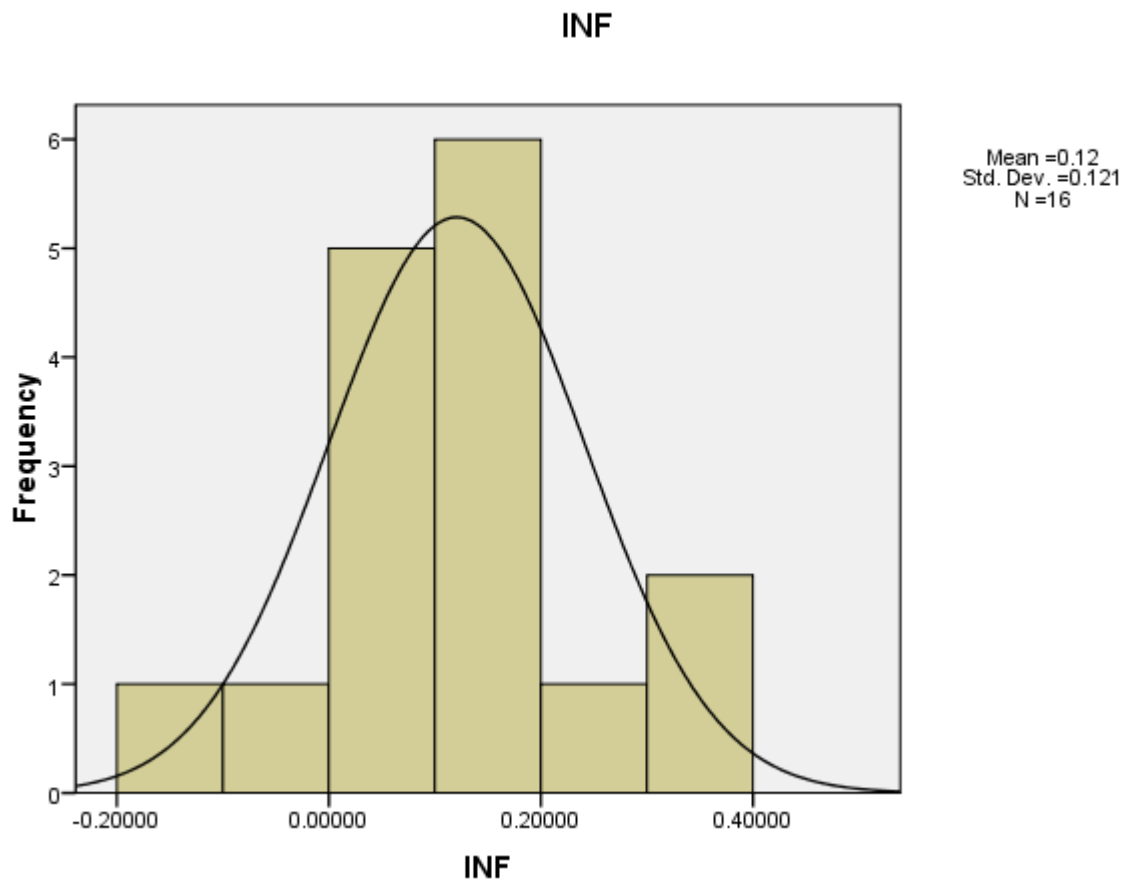
	N	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
ROA	16	.029679	.0019063	.0076250	-.504	.564	-.651	1.091
LIQ1	16	.414751	.0368621	.1474484	.328	.564	-.889	1.091
LIQ2	16	.769740	.0198234	.0792938	-.331	.564	-1.133	1.091
NBE	16	.123528	.0503424	.2013695	.950	.564	-.116	1.091
IR	16	.042500	.0026615	.0106458	.189	.564	-1.183	1.091
INF	16	.120513	.0301915	.1207658	.552	.564	.592	1.091
Valid N (listwise)	16							

Histogram









DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of **Alem Hagos (PhD)**. All sources of materials used for the thesis have been duly acknowledged. I further confirm that 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.

Name

Signature & Date

ENDORSEMENT

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

Advisor

Signature & Date