

**THE EFFECT OF LIQUIDITY RISK MANAGEMENT ON
FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN
SIERRA LEONE**

BY

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DECLARATION

I, the undersigned do state that this is my original work. It has not been done elsewhere. It has not been presented anywhere else for an academic award of any kind.

Sign..... Date.....

Foday Dassie Lamin

D61/5379/2017

This research project has been submitted for examination with my approval as the University supervisor.

Signed..... Date.....

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I deeply consider it a point of duty to extend my profound gratitude to God for his countless blessings.

I also wish to recognize the continued support of my family, which was very much necessary in facilitating the successful completion of this project.

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DEDICATION

I dedicate this project to my family and friends.

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LIST OF ABBREVIATIONS

- BSL** – Bank of Sierra Leone
- FSDO** – Financial Sector Development Plan
- IMF** – International Monetary Fund
- LCR** – Liquidity Coverage Ratio
- NSFR** – Net Stability Funding Ration
- ROA** - Return on Assets
- ROE** – Return on Equity
- UNDP** – United Nations Development Program.
- SPSS** – Statistical Package for Social Science

ABSTRACT

The global financial crisis in the past decade clearly highlighted the relevance of strategic and coherent measures in relation to liquidity risk management in financial systems across the world. The financial meltdown clearly exposed significant failures within the structures of the financial systems that support liquidity management in banks. The need to continuously engage in studies related to financial systems and advice stakeholders accordingly is imperative. The research aims at establishing the nexus between management of liquidity risk and financial returns of commercial banks in Sierra Leone. The study was centered on a representative sample of 8 commercial banks for five years period (2013 to 2017). Secondary data were collected from the 8 commercial banks and the Central bank of Sierra Leone. Descriptive study design was adopted and multiple regression analyses model was also adopted to analyze the association between the outcome and predictor parameters. Significant negative association between liquidity risk management and financial returns of commercial banks in Sierra Leone was revealed. 43.7% of the deviation in financial returns (ROA) was explained by the predictor parameters. Stakeholders should therefore ensure that appropriate mechanisms to manage liquidity risks in the banking sector are adopted to ensure resilience and improved financial returns for commercial banks in Sierra Leone.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Liquidity is the capability of banks to retain financial assets that would enhance effectiveness and efficiency in honoring financial obligations as they fall due and swiftly fund assets growth as the need arise at a reasonable cost. Liquidity risk is the incapability of banks to finance assets growth without incurring unreasonable costs and also to meet the demands for liquid assets at a given point in time. This is generally as a result of the inability of banks to liquidate assets, obtain necessary funding, offset or unwind large exposures without considerably causing movement in prices. Liquidity risk is inherent in the core functions of commercial banks, especially in transforming short term deposits to long term loans. Customers are increasingly using commercial banks as a medium for reaching the payment system; this has led to a circumstance where banks are facing increasing demand for loans from their customers while the core deposits of banks continue to erode. (Decker, 2000).

The global financial crisis in the past decade clearly underscores the relevance of ensuring adequate liquidity management mechanisms in the financial systems across the world, in order for banks to be resilient in withstanding adverse circumstances. The financial meltdown severely disrupted economic activities in a range of industries of the global economy and adversely affected the banking sector. Banks did not only suffer huge financial loss and closure of some banks that could not withstand the tide, they suffer outrageous criticisms from the general public and became the center of attention of financial services regulators. Poor liquidity risk management stood out as one of the

instrumental factors of the crisis. Significant failures within the framework of the financial systems that support banks to adopt sound liquidity risks management mechanisms were exposed (Basel 111 Liquidity Standards).

The inability of banks to maintain a liquidity position that would enhance effective and efficient operations could be associated with financial risks that are premised on failure to match the maturity period of outflows and inflows of liquid assets and/or unexpected demand for liquidity emanating from unforeseen conditions. Therefore, the survival and prosperity of banks is greatly determined by effective and efficient liquidity risk management mechanisms adopted by Banks (Duttweiler, 2009). 'The diversification of sources of revenue and risks profile of banks globally, is related to the regular changes in the financial sector and the incorporation of financial markets, thus increasing the exposure to liquidity risks' (Jenkinson, 2008).

Banks are fundamentally aspiring to improve financial returns and concurrently work towards maintaining sufficient liquidity to carry out their business activities. In order to enhance this conflicting objectives, it is essential that assets and liability portfolios are well managed, taking in to consideration interest rate risks, operational risks and gap analysis (Charumathi, 2008). Commercial banks are very much instrumental in facilitating economic development; their intermediation role helps in channeling funds to various sectors of an economy. Monetary policies should be used to stabilize the financial systems (Bandlamedi & Taidala, 2017).

1.1.1 Liquidity Risk Management in banks

Management of liquidity risk is the capability of financial institutions to enhance a balance between avoiding the problem of retaining excess liquid assets and at the same time ensuring that the bank does not run out of liquid assets to honor its financial commitments as they fall due (Sree, 2003). The ability to retain assets that are easily transferrable is very much instrumental in enhancing stability in a financial system. Lack of adequate liquidity would result to failure of banks to meet their obligations when the need arise which would render the entire financial system unstable (Bwacha & Xi, 2017). Wrongly matching the flows of assets and liabilities is a major source of liquidity risks in banks. Customers' deposits have a short contractual period of maturity as compared to loans. Hence, management of liquidity requires a cushion to address projected withdrawals of deposits by customers (Kumar & Yaddav, 2013).

Decker (2000) postulated that Management of Banks must stipulate strategic mechanisms in respect of the funding activities of banks by clearly outlining the combination of required liabilities and assets that should be employed to enhance adequate liquidity to meet their financial demands. The strategy should also deal with the innate risks related to liquidity that are associated with the primary functions of banks. A contingency plan of policies and procedures should also be maintained to help banks absorb shocks in an event where they are incapable to finance part or all of their activities on time and at an acceptable cost. It is challenging to develop a globally harmonized framework for managing liquidity risks given the differences in banks funding models and the diverse nature of market structures in various jurisdictions (Basel 111 Liquidity Standards).

The techniques of liquidity risks management are constantly evolving to meet the demands of growing inconsistencies in different sources of funding. Managers who fail to develop strategies to meet prevailing circumstances would be adversely affected by funding difficulties. The steps of liquidity risks management entails establishment of strategic direction, integration of liquidity risk management as part of asset/liability management, maintaining a liquidity risk measurement system, track and monitor current capacity and projected liquidity position and periodically evaluating both the bank's financial position and prevailing trends in the financial market for emerging patterns and development of contingency liquidity plans (Decker, 2000).

The Liquidity Coverage Ratio and Net Stability Funding Ratio are quantitative metrics that are meant to address two separate but complementary objectives in liquidity risks management by banks. The LCR aim to enhance resilience over short period of time bymaking sure that banks have high quality short term assets to withstand any acute situationthatdoes go beyond one month and the NSFR ratio helps to supportresilience for long term period by ensuring that banks take advantage of secured source of fundsto financetheir activities (Basel 111 Liquidity Standards).

1.1.2 Financial performance of commercial banks

Management of financial assets, efficiency ofoperations, the size of banks and credit risk management have major influence on financial returns of commercial banks (AlKarim&Alam, 2013). Elizabeth and Greg (2004) argued that the parameters for the measurement of financial returns such as ROA, interest margin and capital adequacy have positive association with quality scores of customer service.

A supportive policy that enhances a framework that promotes financial performance of banks is a critical component of development policy (Knight and Roth 2003). Favorable financial performance of commercial banks is not only critical in ensuring survival of commercial banks; it also helps to boost economic activities in various sectors of an economy, considering the intermediation role played by banks (Fitsum&Asmero, 2016). Fitsume and Asmero further stated that there are multiple approaches that can be used to gauge financial performance of banks which includes: Returns on assets, Returns on equity, provision for loan loss, rate paid on funds and yield on earnings. Various dimensions can be applicable in assessing financial returns of commercial banks which are majorly premised on the intended purpose. Return on equity, profit margin, asset yield, leverage and Return on assets are applicable measures in determining financial performance of banks (Sree, 2003). Traditionally, measurement of financial performance of financial institution is categorized into profitability, liquidity and credit performance measurement (Mabwe& Robert, 2010).

1.1.3 Liquidity Risk Management and Financial Performance of Banks

Fixed assets are more profitable than current assets comparatively, retaining optimum level of liquidity can save banks from incurring costs related to illiquidity and promising investments that requires immediate funding can be seized, thus improving profitability (Bwacha& Xi, 2017). Markowitz (1985) postulated that the extent of return on financial asset is determined by the risks associated with the asset, which implies a positive relationship between risks and returns. Financial asset with higher level of risks gives higher returns to compensate for the level of risks associated with the asset. Kumar (2012) contends that if an organization retains huge amount of current assets and least

short term liabilities, the profitability of such organization would be affected adversely. Hence, profitability and liquidity are inversely related.

Maaka (2013). Concluded in a study conducted in Kenya to understand the nexus between management of liquidity risk and financial feat of commercial banks that financial feat is negatively affected by liquidity gap.

Akinwumi and Michael (2007) concluded in their investigation on management of liquidity and banks' financial returns in Nigeria that there is a noteworthy association between banks' Liquidity and ROA and further recommended the need for banks to evaluate their liquidity management strategy to enhance optimization of returns to shareholders. Lartey et al, (2013) revealed a weak positive association between liquidity and financial returns in a study that focused on listed banks in Ghana.

Marozua, (2013) concluded that there is neither a relevant connection between ROA and liquidity nor an association between return on equity and liquidity in a study that was done in South Africa. Improved profit is realized by banks that retain some current asset, there is however a limit above which retaining current assets would reduce a bank's financial feat all else equal (Bordeleau & Graham, 2010). Nyabateh, (2013) argued that Liquidity management is not the only factor that influences financial feat of profit making banks in Kenya; there are other variables that influence ROA and further confirmed a weak inverse association between liquidity and financial returns of banks.

1.1.4 Commercial Banks in Sierra Leone

The financial sector of Sierra Leone consists of the Central Bank, 13 commercial banks (3 are locally owned), 14 licensed Micro finance associations, 17 Community banks, 51 financial service associations and 50 registered foreign exchange bureaus.

The Central bank of Sierra Leone is engaged on continued regulation and supervision of the financial services providers with the aim of ensuring a stable and resilient financial system in the economy. Even though the financial system remains shallow, frantic efforts have been ramped up to increase access to financial services and deepen the financial market. These include introduction of payment switch technology to increase interbank operations, introduction of collateral register, strengthening of the credit reference bureau and the promotion of mobile money services (BSL Annual Report, 2015).

Development in the financial sector of Sierra Leone has been largely in line with the FSDP 2009, which is premised on enhancing financial stability by widening and deepening the financial sector amongst other measures. At the end of 2014, prudential norms were met by banks. However, when compared with 2013, the number of banks that did not comply with capital adequacy, minimum liquidity, and non-performing loan ratios increased. (UNDP Report 2016). Liquidity ratios of the banking industry from 2013 to June 2016 were significantly higher than the statutory minimum liquidity ratio which indicates that banks were having huge amount of liquid assets to meet the needs of their operations. During the same period, the non-performing loans to gross loans ratio increased significantly. Return on assets at the end of 2011 was 3.8% it significantly fell to 1.85% as at June 2016 (IMF Report, 2016).

1.2 Research Problem

In order to enhance sound and resilient financial systems, various theories and empirical studies have attempted to explain the connection between management of risk related to liquidity and financial returns of banks. The shift-ability theory postulates that the ability of banks to retain assets that could be swiftly transferred without delay and appreciable loss is not only critical in enhancing liquidity of banks; it also places banks in a better position to meet their economic obligations (Bwacha & Xi, 2017). The Liabilities Management theory also postulated that banks do not have reasons to grant self-liquidating loans to customers and retain liquid assets for the purpose of meeting projected liquidity needs; they can always revert to the financial market and borrow reserve money (Emmanuel, 1997).

According to the IMF report (2016) on the indicators of the soundness of the financial sector in Sierra Leone, the liquidity ratios of the banking sector from 2013 to June 2016 were significantly higher than the statutory minimum liquidity ratio which gives the impression that the banks were having huge amount of liquid assets to meet their financial obligations. During the same period, the ROA continues to fall and it is not known whether liquidity and ROA are negatively correlated. Considering the relevance of liquidity risk management in respect of the survival of banks, it is imperative to note that much is not known about the nexus between liquidity risks management and the financial feat of commercial banks in Sierra Leone. There are no local references on the topic. This research project would not only attempt to identify the effect of management of liquidity risks on financial achievements of commercial banks in Sierra Leone and

make necessary recommendations, it would also set the foundation for subsequent studies.

Empirical evidences from studies conducted in different countries by various scholars to understand the link between management of liquidity risks and financial performance of commercial banks have provided divergent conclusions. Nyabateh (2013) and Idowu et al (2017) found a worth noting nexus between management of liquidity risks and financial performance of commercial banks in their respective studies. Warrad, Nimer and Omari (2015) also affirmed a significant link between management of liquidity risks and Returns on assets of Jordanian banks. Godfrey, (2013) did a study in South Africa and found that there is no significant association between ROA and liquidity. Lartey et al (2013) affirmed a positive but weak association between management of liquidity and financial returns of commercial banks in Ghana. Bodeleau and Graaham, (2010) stated that the nexus between management of liquidity and financial performance of a bank depends on the business model of the bank and the state of the economy.

Like any other parameter that can influence the financial achievement of commercial banks, liquidity risk management is associated with complexity. Kumar (2012), argues that liquidity risk management and profitability is a crucial problem in a highly competitive business environment. He further stated that profitability and liquidity are inversely related. An increase in liquid assets would result to a decrease in profitability. Boedeleau and Graham (2010) cautioned that beyond a given level, retaining more liquid assets can diminish banks' financial feat.

Scholars have committed a lot of efforts to establish the link between management of risks related to liquidity and financial performance of banks in different places. Even though there are variations in their scope, methodology, timing and context of study, their respective conclusions suggest that the link between management of liquidity risk and financial performance is controversial. Hence this study is designed to respond to the question: What is the association between management of liquidity risk and financial returns of profit making banks in Sierra Leone?

1.3 Research Objective

The purpose of the research is to investigate the association between liquidity risk management and financial returns of commercial banks in Sierra Leone.

1.4 Value of the Study

The financial crisis did not only expose the weaknesses within the structures that support sound liquidity management in banks, it also draws the attention of policy makers to the need of developing regulations and procedures that would put banks on a sound footing to absorb shocks. Liquidity problems have adverse effects on the operations of banks which may also affect different sectors of an economy, considering the crucial role played by the banking sector. Policy makers are employing relentless efforts to ensure that the financial sector is stable and resilient by continuously developing regulations that would support a sound financial system. The result of the research project would be of relevance to financial sector regulators in developing guiding principles and regulations in respect of the management of assets and liabilities in the banking sector of Sierra Leone.

The result of the study would also help practitioners in the banking sector to have evidence on the association between management of risks related to liquidity and financial returns of commercial banks in Sierra Leone. The recommendation and findings of the study would also be useful in developing credit policies and operating procedures in respect of assets management.

Scholars have grown significant interest in conducting various studies to enhance better understanding of the dynamics in the financial sector and make necessary recommendations, not only to guide regulators in policy formulation but to improve performance in the financial sector and enhance resilience. The result of the study would not only build on of existing knowledge, it would also help scholars that may want to conduct studies related the topic.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is centered on reviewing theories related to the research and empirical studies conducted to reveal the association between management of liquidity risk and financial returns of commercial banks. The first section deals with theoretical framework underlying the study. The second section deals with determinants of banks performance and finally a review of studies done on the topic.

2.2 Theoretical Review

Theories related to liquidity risks management are the basis of this chapter. This subsection would examine four theories that are deemed relevant to research topic. It also entails the determinants of financial returns of commercial banks and review of empirical studies related to the research topic.

2.2.1 Shiftability Theory

Moulton (1915) argued that liquidity of banks is premised on marketability or transferability of bank's assets. The ability of banks to efficiently manage assets that can be simply transferred in a secondary market without delay and appreciable loss is a fundamental source of liquidity. According to the theory, for an asset to be classified as shift able, it must be instantly transferrable with no unacceptable loss arising from the transfer of the asset when the need arises. This definition is mainly applicable to short term financial assets. For instance, Treasury bills, banker's acceptance and commercial paper which could be easily converted in a secondary market. In times of general financial

meltdown, when all banks are in need of cash, the theory suggests that all shift able assets should be transferred to the central bank as the primary source of funding during turbulent times in the financial sector. Dodd (1982) contends that in order to enhance transferability without delay and appreciable loss, such assets should meet three conditions: Appropriate mix of assets of the bank, liquidity management theory and liability management theory.

The major shortcomings of the shift ability theory is that it did not consider the fact that in times of acute financial crisis, assets cannot be shifted to others and in an event where all banks simultaneously shift their financial assets; it would adversely affect both the providers of credit and debtors. Casu et al (2006) observed that during financial meltdown, the smooth functioning of the secondary financial market as an intermediary for transferring financial assets can be interrupted which makes it difficult for banks to have access to liquidity to meet the demands of their activities.

2.2.2 Anticipated Income Theory

This theory is premised on the extension of long term loans by banks to customers. The Anticipated Income Theory postulated that irrespective of the nature of customers, banks should plan liquidation of term loans on the basis of the projected cash inflows of customers. A long term loan is defined as a credit facility that has a payback period that is more than one but not exceeding five years. The theory also suggests that limitations should be placed on the financial activities of the borrowers and at the time of granting the loan, considerable attention should be given not only to the security presented by the borrower but the anticipated income of the borrower should also be examined to

determine the capability of the borrower to meet their financial commitments (Prochanow 1944).

The anticipated income theory addresses three fundamental objectives of banks which are liquidity, safety and profitability. The theory meets these objectives because loans are granted not only on the grounds of providing collateral but also on the basis of examining the ability of the borrowers to fulfill their financial commitments at the end of the agreed period of time. The limitation of the theory is that it fails to meet emergency cash needs for the lending bank since repayment of loans are done on the basis of installments (Idowu et al, 2017).

2.2.3 Liquidity Preference Theory

Keynes (1936) postulated that the need to retain cash is influenced by speculative, precautionary and transactions motives and interest rate is the payment for parting with cash. Rate of interest according to the theory, is established by the assessment of projected needs for money and the amount of money available for satisfying the projected needs. Money required for speculative, precautionary and transactions needs, amounts to the aggregate demand for liquidity. Liquidity preference refers to the quantity of cash an individual/ institution would want to retain in a given point in time.

Appelt (2016) argued that the concept of interest rate as proposed by liquidity preference theory is lacking in consistency. The interest rate as a measure of reluctance to renounce liquid cash cannot simultaneously constitute the price which brings in to balance the desire to retain cash with the supply of cash resources. Appelt (2016) further stated that

the subject of exchange relations is disregarded in relation to the concept of interest rate and the demand for money.

2.2.4 Commercial Loan Theory

This theory argues that banks should not grant long term loans to customers. According to commercial loan theory, banks should only extend self-liquidating loans that are meant to finance production processes with a short term payback period to customers. Self-liquidating loan is a credit facility granted by banks to finance the respective sequential stages of production which includes storage, transformation processes, transportation and sales of finish products. Liquidation of the loan would be done immediately the finish products are sold. The theory is premised on the fact that banks have financial obligations that are payable on demand and the obligations cannot be met if the liquid financial assets are tied up for long period of time. Banks need continuous and substantial cash flow to maintain favorable liquidity position which can be achieved by limiting its credit activities to short term (Bwacha & Xi, 2017).

The merit of the theory stems from the principle that loans should be given for short term period and for productive purposes which increases the possibility of repayment. Short term productive loans improve the liquidity position of banks since credit facilities are not granted for capital intensive projects that have long payback period and debts are settled immediately the products are sold, banks would have access to cash regularly (Ibe, 2013). It is relevant for organizations to meet their needs in respect of liquid assets; the notion of liquidity is related to an organization's financial capability to meet their

financial obligations. High liquidity enhances efficiency and effectiveness in financial management (Maness & Zietlow, 2005).

The theory ignores the concept that bank's liquidity largely depends on the transferability of its assets. Repayment of loans are only made when the products produced are sold, during economic depression, the business activities of traders are adversely affected which would lead to failure on the part of debtors to meet their debt obligations when they come due. The theory also focuses on short term loans only ignoring long term loans which are very much critical in financing development projects (Nwankwo, 1992).

2.3 Determinants of Financial Performance in Commercial Banks

Despite risks related to credit, higher financial returns on assets of banks are associated with diverse activities, ownership and bank size. Bank returns are also influenced by macroeconomic activities (Flamini, McDonald & Schumacher, 2009).

Financial feat of banks can be influenced by external and internal parameters that have significant influence over survival and performance. The internal factor refers to the individual characteristics that can influence the efficiency and effectiveness of a bank to perform exceptionally. The internal determinants of financial performance can be influenced by the Management of a bank. The external determinants of financial performance refer to macroeconomic variables which cannot be influenced by Management (Ongore & Kusa, 2013).

2.3.1 Capital adequacy

Optimum level of capital is a critical internal factor that can determine the financial performance of commercial banks. Capital refers to owners' fund which serves as a buffer in adverse situations. It is one of the critical factors that can influence profitability (Athanasoglou et al., 2005). Greater capital can reduce chances of distress and create liquidity for banks. Customers' deposit is not a reliable source of finance owing to the fact that it is prone to bank run (Diamond, 2000). Capital adequacy reflects the internal capabilities of a bank to survive crisis situation. It is directly associated with the profitability of banks as it greatly determines the expansion of banking activities to risky investments that would yield favorable financial returns (Sangmi & Nazir, 2010).

2.3.2 Asset Quality

The quality of financial assets is also one of the core parameters that can influence financial returns of commercial banks. Efficient and effective management of fixed assets, credit portfolios, current assets and other investments can yield financial returns, thus improve profitability (Athanasoglou, 2005). Interest from loans is a major source of financial returns for banks which has direct effect on profitability. The loss derived from bad loans is a major source of risk that can deteriorate profitability of banks (Dang, 2011). A major concern of all banks is to ensure that nonperforming loans are drastically reduced to a lower level which is directly correlated to profitability. The lower the nonperforming loan ratio, the better the financial performance of a bank (Sangmi & Nazir, 2010).

2.3.3 Management Capability

The capability of Management to effectively and efficiently deploy assets to generate income and adequately manage the running costs of a bank is a critical factor that can determine financial performance of banks. It is complex to measure management capability using financial ratios. Subjective qualitative techniques are usually used to evaluate the capabilities of management. However, some ratios and other qualitative dimensions can be used to proxy Management Capability (Sangmi&Nazir, 2010).

2.3.4 Macroeconomic Factors

Macroeconomic variables such as Fiscal and monetary policies, political stability, development in other sectors of an economy, Inflation, Interest rates and GDP growth rate are key determinant of financial performance of commercial banks. For instance, during increase economic activities the demand for credit would be subsequently higher as compared to recession period which have direct effect of profitability (Athanasoglou, 2005).

2.3.5 Liquidity Management

Liquidity is defined as the capability of banks to honor their financial commitments as they come due and promptly fund asset growth at a reasonable cost (Decker 2000). Optimum level of liquidity is positively associated with financial returns of banks (Ongore&Kusa, 2013). The capacity of banks to finance asset growth and fund both unexpected and expected collateral and cash demands as they arise is critical to ongoing viability. Efficient management of risk related to liquidity enables banks to honor their

financial obligations and decrease the likelihood of an adverse situation developing (Kumar, M. &Yadav G.C., 2013).

2.4 Empirical Studies

Kaitibiet al. (2018) studied the link between Efficient Management of Credit Risk and Profitability of Banks in Sierra Leone. The researchers studied one of the commercial banks (Rokel Commercial Bank), for the period 2010 – 2014. Ratios and charts were adopted to examine the association that existed between the outcome and response parameters. The study established that efficient credit management considerably influenced financial returns of commercial banks during the period of the case study.

Marozua (2013) did a study in South Africa to ascertain the link between management of liquidity and financial returns of banks for the period 1994 – 2014. Least square regression model was employed to empirically determine the link between ROA and liquidity, ROE and liquidity respectively. The research revealed that there is insignificant link between ROA and liquidity.

Kargbo,Hui and Li (2015) studied Commercial Banks' Performance and Credit Risk in Sierra Leone for the period 1997 – 2011. Panel least square regression approach was used to examine the connection between the response and outcome parameters. The conclusion was that loan loss provision, nonperforming loans and the quality of total loans contributed in the poor performance of banks in Sierra Leone. However, bank size and interest rate spread have positive impact on profitability at a very small margin.

Das, Chowdhury, Rahma, and Dey(2015) examined the association between Management of liquidity and financial returns of commercial banks in Bangladesh covering the period 2011 – 201. Liquidity and profitability ratios were used to find out the link between management of liquidity risk and profitability of commercial banks. The study presupposes that adequate liquidity management can increase profitability of banks.

Nyabateh (2013) explored the link between management of liquidity and financial returns of financial institutions at the NSE for the period 2010 – 2014. The population of the study was nineteen financial establishments. Regression analysis model was adopted to enhance understanding of the link between the response and predictor variables. The study revealed a weak positive link between financial returns and liquidity of the institutions that were studied.

Shukla and Muchem (2017) studied the nexus between management of Liquidity and financial performance of commercial banks in Rwanda. Fourteen commercial banks were randomly selected for the purpose of the study. Multiple regression technique was adopted to establish the nexus between management of liquidity and financial returns of commercial banks in Rwanda. The study concluded that holding more liquid assets as compared to total assets would lead to lower returns to commercial banks in Rwanda and the effect is significant at 5%.

Graham and Bordeleau (2010) studied the implications of retaining liquid assets on financial returns of big US and Canadian banks for the period 1979 – 2009. The study found improved financial returns for banks that retained optimum level of liquid assets.

However, retaining liquid assets beyond the optimal level would diminish financial returns, all else equal.

Idowu et al (2017) did a study to ascertain the link between management of liquidity and performance of banks in Nigeria. The study focused on four banks for the period of 2007 – 2016 and Pearson's correlation coefficient model was adopted to analyze the association. The study found significant link between liquidity of banks and ROA and ROE.

Mwangi (2014) did a research on the link between management of liquidity risk and financial returns of commercial banks in Kenya for the period 2010- 2013. For the purpose of the study, forty three listed commercial banks were targeted. Descriptive study design was used by the research to analyze the link between the variables. The study concludes that liquidity risks management is negatively associated with financial performance of commercial banks.

Ibe (2013) explored the association between management of liquidity risks and financial returns of banks in Nigeria. The period of study was 1995 – 2010. Three banks were selected at random to represent the banks in the banking sector of Nigeria. The hypothesis of the research was examined by the researcher using Regression analysis. The study concludes that management of liquidity is a challenge in the Nigerian banking sector.

2.5 Conceptual framework

Figure 2.1 is a diagrammatic representation of the response and predictor parameters. The response parameter would be financial performance, which is determined by ROA. The predictor parameters would be liquidity risk management, measured by Liquid assets to total assets ratio, loans to total deposits ratio, total liability to total asset ratio, capital adequacy ratio and cash position indicator ratio respectively.

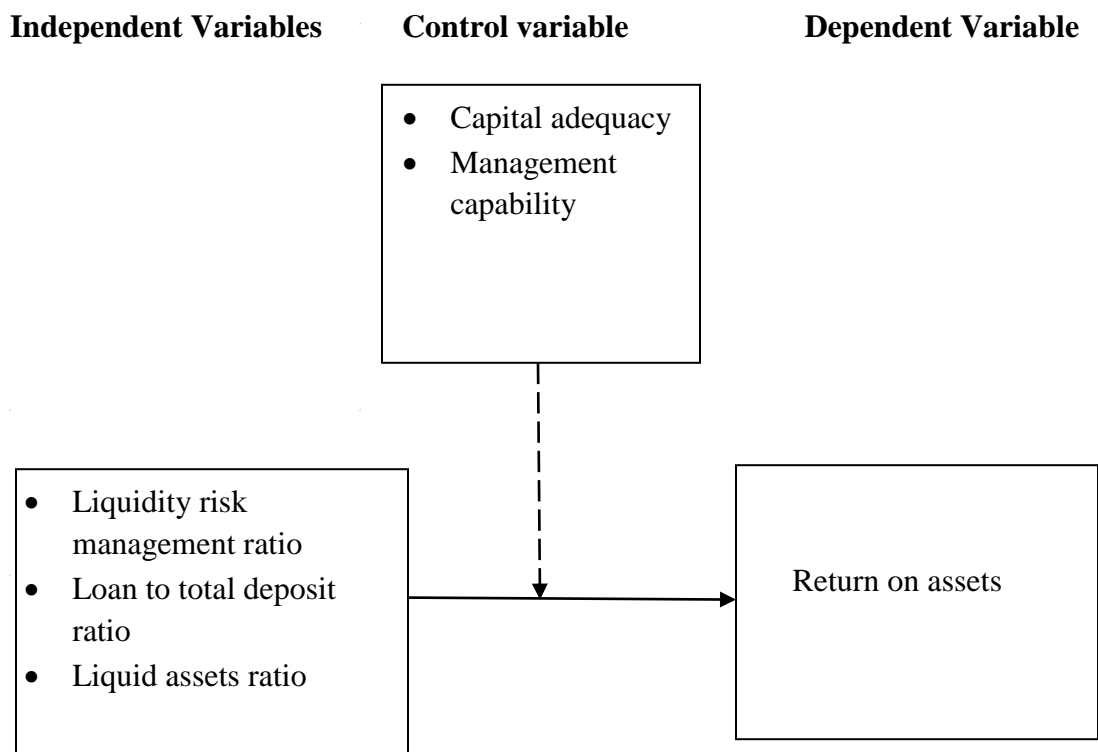


Figure 2.1: Conceptual Framework

Source: Author (2018)

2.6 Summary of Literature Review

The concept, limitations and importance of various theories to the research have been examined. The empirical review entails the contributions of various researchers that have

attempted to investigate the relationship. The conceptual framework is the diagrammatic representation of the response and predictor variables. It is apparent from the respective positions of the various theories and conclusions from the empirical studies that the effect of liquidity risk management on financial returns of banks is a controversial topic which requires further investigation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study methodology used by the researcher to explore the associations of the variables is explained in this chapter. The chapter entails the design of the research, the population of study, the sources of data, technique of data analysis, diagnostic test and empirical model.

3.2 Research design

The study adopted descriptive research design to give detail description of the link between the response and predictor variables. This study design was deemed suitable as it entails the process of unbiased observation and analysis of data. Dulock(1993) postulates that descriptive analysis technique involves the process of giving a systematic and accurate account of facts and description of events, population and areas of interest. Descriptive analysis design also helps in unveiling associations and determining connections between and among predetermined variables by close examination. The design also limits the possibility of interfering with the outcome of the study by the researcher.

3.3 Target Population

The research was centered on 8 commercial banks, from the 13 commercial banks that are providing services in the banking sector in Sierra Leone (Appendices I & II). The 8 commercial banks constitute more than 50% of the banks operating in the banking sector

in Sierra Leone and collective have 66 branches across the country. They have huge assets base and vast scope of operations. (BSL Annual report, 2015).

3.4 Data Collection

The researcher used secondary data which was obtained from the annual publications of the Central bank of Sierra Leone. From the respective statements of accounts of the banks that were studied, information on annual net profits, total assets, total deposits, total liabilities, Equity, total liquid assets, total income and annual operating expenses were obtained and the notes to the accounts were also considered for pertinent information. Relevant information was also collected from the websites of the banks to ensure that a representative data is available to conduct the study.

3.5 Data Analysis

Multiple Regression analysis model was adopted to establish the association between management of liquidity risk and financial returns of commercial banks in Sierra Leone. Multiple regression model is a quantitative technique that can enhance analysis of the link between two or more variables (Haffman, 2010).

3.5.1 Diagnostic Tests

Diagnostic tests were conducted to enhance reliability of the result of the model. The data was examined to ensure that it conforms to the requirements of the multiple linear regression model. To confirm the linearity assumption of the data, the scattered plot was examined. The multicollinearity section was also checked to confirm that collinearity does not exist between the predictor parameters. Kolmogorove-Smirnov test was done to establish whether the data conforms to the normality assumption of the model.

3.5.2 Analytical Model

The analytical model takes the form:

$$Y = K + K_1X_1 + K_2X_2 + K_3X_3 + K_4X_4 + K_5X_5 + \epsilon$$

Where:

Y = Measure of Financial performance, through ROA

$$ROA = \frac{\text{Profit after tax}}{\text{Average asset}}$$

K = Constant

ϵ = Error term.

K1, K2, K3, K4, K5, K6; are regression coefficients.

$$X_1 = \text{Liquid asset to total asset ratio} = \frac{\text{Liquid Assets}}{\text{Total Assets}}$$

$$X_2 = \text{Loans to Total Deposit Ratio} = \frac{\text{Loans}}{\text{Total Deposits}}$$

$$X_3 = \text{Liquidity Risk Management Ratio} = \frac{\text{Total Liability}}{\text{Total Asset}}$$

$$X_4 = \text{Capital Adequacy} = \frac{\text{Equity}}{\text{Total Asset}}$$

$$X_5 = \text{Management Capability} = \frac{\text{total operating expenses}}{\text{Total Revenue}}$$

3.5.3 Statistical Test of Significance

R² value (coefficient of determination) was used to clarify the extent of disparity in the outcome variable that is influenced by the predictor variables. The significance of the association between the variables was explained by the F- test at 5% level of significance.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The findings and results of the research is detailed in this chapter. The findings of the research are based on the statistical analysis of the data obtained from the selected commercial banks in Sierra Leone for five years period, from 2013 – 2017.

4.2 Exploratory Test of Normality

The data that is used to conduct multiple regression analysis should be normally distributed. This assumption was tested by the researcher using the Kolmogorove-Smirnov test. The table below entails the test result which aims at proving the normality of the data that was used for the research.

Table 1: Test of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
ROA	.261	40	.145	.689	40	.034

a. Lilliefors Significance Correction

Table 1 entails the outcome of the test of normality. The numerical test compares a sample score that is normally distributed with the data. Kolmogorove - Smirnov test was used as a means of confirming the normality of the data. The assumption is that the significant result of the test should be higher than 0.05, which would subsequently imply that the data is normally distributed. If the significant value is less than 0.05, it implies that the data considerably deviates from normal distribution. From the table above, the

significant value of the test was 0.145 which is greater than 0.05, suggesting that the data is normally distributed.

4.3 Descriptive Analysis

The table below denotes the result of the descriptive statistics of the outcome and predictor variables of the regression model. The model entails variables of the banks that were studied.

Table 2: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	40	-.1698382	.0618071	.0181915	.0397961
TL/TA	40	.5681928	1.0703204	.8641668	.1160981
L/TD	40	.0212028	.5108066	.2009088	.1402521
LA/TA	40	.1185222	.9463077	.4491365	.2180753
E/TA	40	-.0593321	.4318071	.1375231	.1093048
OE/TR	40	.0841165	2.6622357	.7762464	.3830022
Valid N (listwise)	40				

The mean of the return on assets for the period of study was 0.0181915 which implies that significant returns were not realized on the assets of banks in Sierra Leone. With a maximum value of 0.181915, a minimum value of -1698382 and a standard deviation of 0.0397961 indicates that the deviation of the return on assets during the period of study was relatively low.

The result also implies that the mean of the total liability to total assets during the period of study was 0.8641668 which imply that banks had a worth noting proportion of

liabilities as compared to total assets. The minimum and maximum values were 0.5681928 and 1.0703204 respectively and the standard deviation was 0.1160981 which denotes a relatively low variability.

The result further states that the mean of the Loans and advances to total deposits (L/TD) was 0.2009088 which is fairly low, denoting a relatively low loans and advances as compared to deposits. The minimum value was .0212028, the maximum value was .5108066 and the standard deviation was .1402521 implying a rather low deviations.

The mean of the liquid assets to total assets (LA/TA) of banks during the period of study was .4491365 which relatively implies that close to half of the total assets held by banks constitutes liquid assets. The minimum value was .1185222; maximum value was .9463077 and the standard deviation was .2180753 indicating a low variability.

The equity to total assets (E/TA) had a mean of .1375231 denoting a relatively low proportion of equity to total assets during the period of study. The Minimum value was -.0593321, the maximum value was .4318071 and a standard deviation of .1093048 implying a relatively low deviation.

Finally, the result of the descriptive statistics indicates that the mean of the operating expenses to total revenue (O/TR) for the period of study was .7762464 which denotes a worth noting proportion of operating expenses to total revenue of banks in Sierra Leone. The minimum and maximum values were .0841165, 2.6622357 respectively and the standard deviation was .3830022 which fairly represents an average variability.

4.4 Correlation Analysis

The correlation matrix below presents the extent of association that subsists between the variables. The table below presents the correlation coefficients obtained from the data collected from the target population of the study. The table also helps to determine multicollinearity.

Table 3: Correlation Matrix

		Correlations					
		ROA	TL/TA	L/TD	LA/TA	E/TA	OE/TR
Pearson Correlation	ROA	1.000					
	TL/TA	-.403	1.000				
	L/TD	.314	-.450	1.000			
	LA/TA	-.326	-.470	-.417	1.000		
	E/TA	-.430	-.543	.482	.588	1.000	
	OE/TR	-.544	.326	-.392	-.315	-.338	1.000
Sig. (1-tailed)	ROA	.					
	TL/TA	.005	.				
	L/TD	.141	.042	.			
	LA/TA	.001	.010	.004	.		
	E/TA	.003	.010	.021	.006	.	
	OE/TR	.000	.020	.008	.170	.016	.

The link between return on assets and total liabilities to total assets was negative, ($r = -0.403$), denoting an inverse relationship. Increase in return on assets could result to decrease in total liabilities to total assets. The loans and advances to total deposits is positively correlated with returns on assets ($r = 0.314$), which depicts a positive association. The table also shows that liquid assets to total assets has a negative correlation with return on assets ($r = -0.326$), depicting negative association. An increase in liquid assets to total assets could lead to a decrease in returns on assets.

Operating expenses and total revenue has a negative association with return on assets. ($r=-0.544$), depicting a negativelink. It is probable that an increase in total operating expenses would eventually result in decrease in return on assets. The correlation coefficient of equity to total assets and return on assets is alsonegative, ($r= -0.403$) denoting an inverse relationship. The table further indicates that equity to total assets and liquid assets to total assets are positively correlated ($r= 0.588$). The positive association implies that an increase in equity to total assets could subsequently lead to an increase in total liquid and total assets.

The correlation result shows a negative nexus between operating expenses to total income and equity total assets, ($r= -0.338$) this relationship could imply that when operating expenses to total income decreases, equity to total assets would increase. Loans and advances to total deposits and liquid assets to total assets have a correlation coefficient of ($r= -0.450$) which denotes an inverse association. Increases in loans and advances to total deposits could result to decrease in liquid assets to total assets.

4.5 Multiple Regression Analysis

This subsection entails the model summary, a table that detailed the result of the regression analysis of the outcome and response variables and the result of the Durbin Watson test.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.661 ^a	.437	.408	.1916933	.417	19.450	5	34	.000	1.731

a. Predictors: (Constant), OE/TRA, LA/TA, TL/TA, L/TD, E/TA

b. Dependent Variable: ROA

The coefficient of the regression analysis denotes the extent of disparity in the outcome variable; Return on Assets, that is caused by the predictor variables; total liabilities to total assets ratio, loans and advances to total deposits ratio, liquid assets to total assets ratio, equity to total assets ratio and operating expenses to total revenue ratio. The adjusted $R^2 = 43.7\%$. Indicating that 43.7% of the variation in the outcome variable was determined by the predictor variables. The Durbin – Watson test statistic was 1.731 denoting that there is no multicollinearity among the variables.

Table 5: Analysis of variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.046	5	.009	19.450	.000
	Residual	.016	34	.000		
	Total	.062	39			

a. Dependent Variable: ROA

b. Predictors: (Constant), OE/TRA, LA/TA, TL/TA, L/TD, E/TA

The Anova table above presents information on the variability within the regression model. The table shows that the calculated F statistic (5, 32) = 19.450 and the regression association had a p-value = 0.000, which is below the level of significance of 0.05. Hence, the null hypothesis which states that there is insignificant nexus between the outcome variable and predictor variables is rejected.

Table6: Coefficients

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.049	.091		6.538	.000
	TL/TA	-.025	.090	-.073	2.276	.002
	L/TD	-.017	.034	-.060	-.509	.014
	LA/TA	-.004	.019	-.131	3.204	.003
	E/TA	-.094	.100	-.091	2.948	.004
	OE/TR	-.082	.010	-.108	-8.352	.000

a. Dependent Variable: ROA

The multiple linear regression analysis was done to understand the statistical association between the response and predictor parameters. The analytical model was:

$$Y = K + K_1X_1 + K_2X_2 + K_3X_3 + K_4X_4 + K_5X_5 + \epsilon$$

This was modeled as follow:

$$Y = .049 - .131X_1 - .060X_2 - .073X_3 - .091X_4 - .108X_5 + .091$$

The coefficient of the liquid assets to total assets and the return on assets denotes a significant inverse association. The coefficient was -.131 and the p value was .003, at a 5% level of significance and a 95% confidence interval. The negative association implies that an increase in liquid assets to total assets during the period of study could result to a decrease in return on assets.

The result also suggests that total liabilities to total assets had a negative relationship with returns on assets. The coefficient was -.073 and p = .002 at a level of significance of 0.005 and 95% confidence intervals. This implies an inverse relationship; increase in

liquid assets to total asset during the period of study would have resulted to a reduction in return on assets.

The standardized coefficient of the operating expenses to total revenue and the returns on assets was $- .108$, the p value was 0.000 , at 5% level of significance and 95% confidence interval which indicates a significant negative association. The coefficient table further revealed a negative link between equity to total assets and return on assets. The coefficient was $-.091$, p value = $.004$ at 5% level of significance and 95% confidence interval. The coefficient table also shows that the loans to total deposits had a negative coefficient of $-.060$ and the p value was $.014$ which was above the significance level of 5%.

4.6 Discussion of Research Findings

Multiple regression analysis was done using SPSS, to understand the association between management of liquidity risk and financial returns of commercial banks in Sierra Leone, for the period 2013 to 2017. From the results of the study, 43.7% of the variation in the financial returns of commercial banks in Sierra Leone, determined by ROA, was explained by liquidity risks management, measured by liquid assets to total assets ratio, loans and advances to total deposit ratio, total liabilities to total assets ratio, capital adequacy ratio and operating expenses to total revenue ratio. This finding seemed to conform to Nyabateh (2013) in a study in which he argued that 56.12% of the disparity in financial returns of commercial banks in Kenya was determined by liquidity management.

The study also reveals that liquid assets to total assets had the greatest impact on financial performance and also have inverse relationship. 13.1% in the disparity in financial performance was accounted for by liquid assets and total assets management, followed by management efficiency which accounted for 10.8% variation. Mwangi (2016) found that liquid assets and total assets management had negative impact on financial performance in a study conducted in Kenya. Kumar (2012) argued that retaining huge amount of liquid assets and least amount of short term liabilities, would negatively affect profitability.

The total liabilities to total assets accounted for 7.3% variant in the return on assets while loans and advances accounted for 6%. The meaning of the return on assets for the period of study was .0181915 which was relatively low. This result seemed to conform to the IMF report (2016), which noted a consecutive reduction in return on assets from 2011 to June 2016.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion of the research and recommendations in respect of further research.

5.2 Summary of findings

The objective of the research was to understand the association between management of liquidity risks and financial returns of commercial banks in Sierra Leone. The study focused on 8 commercial banks and descriptive study design was adopted. Secondary data was collected covering a five years period, 2013 to 2017. Descriptive analysis and regression analysis were done to establish the association between management of liquidity risks and financial returns of commercial banks in Sierra Leone.

The result of the regression analysis shows a significant negative nexus between liquidity risk management and financial performance of commercial banks in Sierra Leone. The findings of the study revealed that 43.7% of the variation in returns on assets during the period of study was explained by liquidity risks management. The liquid assets to total assets accounted for the highest variation, followed by operating expenses to total revenue respectively.

5.3 Conclusion

The research found that liquidity risk management significantly influenced financial returns of banks in Sierra Leone during the period of study. Hence, the study revealed a

significant link between management of liquidity risk and financial returns of commercial banks. If liquidity problem is unchecked, it may result to the failure of banks to meet their financial obligations and the demands of their customers, which may subsequently affect the entire financial systems adversely. Optimal level of liquidity should be maintained to enhance operational efficiency and effectiveness.

It is imperative to note that the operating expenses to revenue ratio explained a significant proportion (10.8%) of the deviation in the financial performance of commercial banks during the period of study, which makes it important for commercial banks to properly manage their running costs to enhance favorable returns and survival. The study also concludes that liabilities to total assets ratio negatively affected profitability. Hence, banks should make sure that the flows of assets and liabilities are managed efficiently to prevent illiquidity and enhance favorable returns on assets. The study further concludes that the average return on assets for the five years period of study was relatively low.

5.4 Recommendations

The study established negative association in relation to management of liquidity risks and financial returns of commercial banks in Sierra Leone which makes it important for Management to develop the culture of sound liquidity management among other measures, which would not only maximize returns on assets but would also place banks on a sound footing to absorb shocks that may emerge in the financial system. It is also recommended that the other factors that explained 56.3% of the variations in returns on assets during the period of study be identified and addressed to enhance profitable and resilient banking system.

The findings of the study shows that loans and advances to total deposits also had a negative relationship with returns on assets during the study period which makes it relevant for management of commercial banks in Sierra Leone to take keen interest in the manner in which loan portfolios are managed to maximize returns. Stable sources of funds should be used for the purpose of giving Loans and advances and well diversified portfolios should be maintained to hedge against risks and at the same time maximize returns.

5.5 Limitations of the study

The research was centered on a representative sample of commercial banks in Sierra Leone only. Hence the interpretations of the findings are limited to the context of the banking industry in Sierra Leone. The findings cannot be used to make an opinion in respect of liquidity risks management in other countries.

The study also predominantly used secondary data that was collected from the central bank of Sierra Leone and the respective banks that were studied. Therefore, all limitations that are related to the use of secondary data are applicable to the study.

The study also focused on five years period (2013 to 2017). The business environment during the period of study may be significantly different from period of recession or high economic growth which may significantly influence liquidity management in banks. The study considerably relied on financial results of banks; there are multiple factors that should be taken in to consideration in the management of liquidity risks in banks.

5.6 Suggestions for further studies

Further studies that would target all the banks for a longer period can be done in a bid to give a broader view on the topic and add to the body of knowledge. Liquidity management is important to all sectors of an economy. However, the study focused on representative sample of commercial banks in Sierra Leone only. It would be important if this study could be replicated in other sectors taking in to consideration longer period of study.

Further research on management of risks related to Liquidity could be done with the primary focus on different financial products that could be used as a source of finance and investment. The study in this circumstance would attempt to reveal how various sources of funding would affect liquidity and its subsequent impact on financial returns.

Studies in the future could also be conducted during the periods of economic meltdown. The center of attention in this instance would on revealing the nexus between management of risks related to liquidity and financial returns of commercial banks when the business environment is experiencing financial shocks.

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APPENDICES

Appendix I: List of Commercial Banks in Sierra Leone

- 1 Sierra Leone Commercial Bank
- 2 Rokel Commercial Bank (SL) Limited
- 3 Union Trust Bank (SL) Limited
- 4 Guaranty Trust Bank (SL) Limited
- 5 First International Bank (SL) Limited
- 6 Standard Chartered Bank (SL) Limited
- 7 Ecobank (SL) Limited
- 8 Access Bank (SL) Limited
- 9 United Bank for Africa (SL) Limited
- 10 Skye Bank (SL) Limited
- 11 Keystone Bank (SL) Limited
- 12 FBN Bank(SL) Limited
- 13 Zenith Bank (SL) Limited

Appendix II: List of Banks that were studied.

- 1 Sierra Leone Commercial Bank
- 2 Rokel Commercial Bank (SL) Limited
- 3 Guaranty Trust Bank (SL) Limited
- 4 Standard Chartered Bank (SL) Limited
- 5 Ecobank (SL) Limited
- 6 United Bank for Africa (SL) Limited
- 7 Skye Bank (SL) Limited
- 8 Zenith Bank (SL) Limited