Effectiveness of Credit Risk Management of Ethiopian Commercial Banks (Case of some public and private banks)

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1.Introduction

Credit risk management is very important to banks as it is an integral part of the loan process. It maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure with view to shielding the bank from the adverse effects of credit risk. Banks are investing a lot of funds in credit risk. It is a fact that the Ethiopian economy is strongly connected to international economy. Hence, it is natural that the Ethiopian economy was affected by the financial crisis. The first reverse impact of the global financial crisis on the Ethiopian economy was in the financial market which has declined in last few years. The global financial crisis revealed the importance of banks' credit risk management in mitigating credit default risk as most banking problems worldwide have been caused by weaknesses in credit risk management that include high credit concentration, inadequate credit risk monitoring, ineffective credit risk measuring, poor credit risk rating, insufficient lending procedures, vulnerability to liquidity stresses and sensitivity to market fluctuations.

2.Statement of the Problem

Ethiopian banks are suffering from rising credit default with its reverse repercussions on banks' performance which requires increasing the effectiveness of credit risk management. Hence, analyzing the effectiveness of credit risk management of Ethiopian Commercial Banks becomes essential for identifying its characteristics, determinants, challenges and development methods. The research problem can be expressed in the following question: what are the determinants, challenges and development methods of Effectiveness of credit risk Management of Ethiopian Banks.

3.Research Objectives

The study objectives are:

- To identify the characteristics of credit risk management of some selected Ethiopian Banks.
- To investigate the determinants of effectiveness of credit risk management of Ethiopian Banks.
- To find out the most serious challenges facing the effectiveness of credit risk management of Ethiopian Banks.
- To explore the development methods of effectiveness of credit risk management of Ethiopian Banks.

4.Research Hypotheses

Based on research problem and objectives, the research hypotheses are:

H01: There is no statistically significant relation between capital adequacy and effectiveness of credit risk management in Ethiopian Banks.
H0 2: There is no statistically significant relation between asset quality and the effectiveness of credit risk management in Ethiopian Banks.
H0 3: There is no statistically significant relation between management soundness and effectiveness of credit risk management in Ethiopian Banks.

H0 4: There is no statistically significant relation between bank's earning and effectiveness of credit risk management in Ethiopian Banks.
H0 5: There is no statistically significant relation between liquidity and the effectiveness of credit risk management in Ethiopian Banks.

H0 6: There is no statistically significant relation between bank Size and the effectiveness of credit risk management in Ethiopian Banks.

5. Review of related literature

5.1 Review of Previous Studies in Other Countries

(**1**) The Study of Asli Kunt &Enrica Detragiach (2010) on "Basel Core Principles and Bank Risk: Does Compliance Matter?" used the Z-score estimates for calculating the bank risk as in the following equation:

Zij= +b1X1 j+b2X 2ij+b3X 3j

Where
Zij = country risk of a bank where *Z*=(Average return on assets+equity)/(Standard Deviation of return on Asset) X1j=is the Basel compliance score in a country j

X2 ij=is a bank characteristics of bank size and cost efficiency

X3j=country characteristics in terms of GDP growth.

Ɛ= random characteristics

The study concluded that effective banking supervision is associated with bank management soundness and found that overall index of compliance of Basel Accord is not associated with bank risk Z-score.

(**2**) The Study of Bodla & Verma (2009) on "Credit Risk Management Framework at Banks in India" examined the implementation of credit risk management in commercial banks in India. The study concluded that authority of approval of credit risk vests with board of directors in 94% of public sector banks and 62.5% in private sector banks. Credit policy committee played significant role in the approval of credit risk management. Most of the banks in India perform industry studies, periodic credit calls, periodic plant visit, developing MIS for the customers' risk scoring and annual review of accounts. Indian banks are abstaining from the use of derivatives as a risk hedging tool; Indian banks conduct credit risk management

according to Basel II Accord and to central bank guidelines; there is no statistical difference in credit risk management between private and public banks. However, there is a significant statistical difference between small and large banks.

(**3**) The Study of Espinoza, Raphae, Prosad, Ananthakrishnan and Oral Williams(2010) on "Regional Financial Integration of GCC" has concluded that the financial indicators of Saudi Banks have shown an increasing ratio of nonperforming loans that ranged between 5.4%-7.6%, increasing provision rates to cover doubtful loan which ranged between 128%-153% and liquidity was moderate ranging between 28%-35% but capital adequacy was convenient ranging 16% to 20% and return on equity is reasonable ranging 22% to 25%, loan/deposit was high (86.9%).

(**4**) The Study of Rudra & Jayadev. M (2009) "Are Banks Stocks Sensitive to Risk Management?"is an attempt to shed lights on sensitivity of Indian bank's stocks to risk management by conducting regression analysis on indicators of risk management and return on stocks. The study concludes that stock return responded positively to risk management and banks in India did not focus on increasing capital adequacy to mitigate credit risk and considered risk management is an important determinant of banks stock return. The study recommended that Indian banks should have better risk management capabilities to reward stock holders.

(**5**) The Study of Al-Tamimi & Al-Mazrooei (2007) on "Banks Risk Management: Comparison Study of UAE National and Foreign Bank" examined the degree to which the UAE banks use risk management in dealing with different types of risk besides comparing risk management practices between national and foreign banks. It refers to three risk mitigation strategies of simple business practices, transferring risk for other participants and managing risk at acceptable level. The study used a questionnaire for collection of primary data concerning the aspects of credit risk management, methods of risk identification and the risks facing the UAE banks. The findings are: the three most important types of risks facing UAE commercial banks are foreign exchange risk followed by credit risk then operational risk; UAE banks suffer from loan default problems; UAE banks are efficient in assessing, monitoring and identification of credit risk and the significant statistical differences between UAE national and foreign banks.
(**6**) The Study of Espinoza, Raphael and Prassad, Ananthakrishnan (2010) on "Nonperforming Loans in the GCC Banking System and their Macroeconomic Effects" has concluded that the nonperforming ratios of credit of the GCC banks have worsened from 7% to 15% during (1995- 2008) due to declining economic growth, increasing interest rates and risk aversion increase. Such a worsening of nonperforming ratios (NPLs) has reverse effect on the macroeconomic of GCC countries with semi-elasticity around 0.4 between NPLs and macroeconomics of GCC.

(7) The Study of Rani (2009) on "CAMEL Frame Work of Risk Management in Indian Banks" emphasized the following determinants of efficiency of credit risk management: enhancing capital adequacy; strengthening assets quality; improving management soundness; increasing earnings, having adequate liquidity and reducing sensitivity to market risk. The study findings are:(1) Indian banks have maintained a minimum capital to risk weighted assets ratio of 9% compared to 8% of Basel II.(2) Most Indian banks have the best indicators of asset quality. (3) Indian banks have done remarkable job in containing nonperforming loans. (4) The asset turnover ratio, which is a proxy of management soundness, is increasing every year in Indian banks that denote bank efficiency in using assets in generating revenue.(5) Earning of the biggest three Indian banks were fluctuating in the last five years. (6) There is high liquidity ratio in Indian banks to meet client cash withdrawals. (7) Indian banks used internal

control system to strengthen the bank capacity to control financial operations. (8) Technology is a key factor in banking performance.

(8) The study of Salas & Saurina (2002) on "Credit Risk In Two Institutional Regimes of Spanish Commercial and Saving Banks" examined credit risk in Spanish banks and used panel data to compare the determinants of loan problem in Spanish banks in the period 1985-1997, using macroeconomic and individual banks variables to explain credit risk. These variables are: GDP growth rate, family and firm indebtness, rapid credit expansion, portfolio composition, bank size, net interest margin, capital ratio and market power. The study concludes the significance of early warning indicators, the advantage of merger of banks, the role of banking competition and the type of ownership in determining credit risk.

5.2. Theoretical Framework of Credit Risk Management at Banking Institutions

In the post era of the International Financial Crisis, banking institutions worldwide including Ethiopian Banks are exposed to several risks including credit risk. Mostly, the main causes of the financial crisis are real estate bubble; sever speculations by investors, use of derivatives, besides credit defaults of customers. *Basel Accords* are international agreements among central banks members of the Bank of International Settlement (BIS). The purposes of the Basel Accords are (Coyle: 2000): (1)To promote safety and soundness of the financial system. (2) To ensure adequate level of capital to safeguard the bank's deposits. (3) To enhance competitive equality. Basel Accords are classified into: Basel I, Basel II and Basel III. *Basel Committee* has adopted the following *principles* (Basel Committee:1999): (1) Board of directors should have responsibility for approving and reviewing the credit risk strategy (2) Senior management should have responsibility for implementing the credit risk strategy, policies and procedures for identifying, measuring, monitoring, and controlling credit risk.(3) Banks should identify and manage credit risk inherent in all products and activities.(4)Banks must operate under sound, well-defined credit granting criteria. (5) Banks should establish overall credit limits at the level of individual borrowers.(6) Banks should have a clearly-established process in place for approving new credits as well as the extension of existing credit.(7) Credits must be monitored (8) Banks should have in place a system for the ongoing administration of various credit risk-bearing portfolios.(9) Banks must have in place a system for monitoring the condition of individual credits including determining the adequacy of provisions and reserves.(10) Banks should develop internal risk rating systems in managing credit risk.(11) Banks must have information systems and analytical techniques that enable management to measure credit risk (12) Banks must have in place a system for monitoring the overall composition and quality of the credit portfolio.(13) Banks should consider potential future changes in economic conditions when assessing individual and portfolio credits (14) *Credit risk* could be defined as the potential that a bank's borrower will fail to meet his obligations in accordance with agreed terms of credit and *credit risk management* is defined as the process of identifying, measuring, Supervisors should require that banks have an effective system to restrict bank exposures to single or groups of borrowers.

Credit risk is defined as the potential that a bank's borrower fails to meet his obligations in accordance with agreed terms of credit. Credit risk management is defined as the process of identifying, measuring, assessing, monitoring and controlling credit risk (Basel Committee: 2000) Hence, the elements of credit risk management are:(1)Identifying the credit risk (2) Measuring Risk.(3) Rating Credit risk. (4) Assessing credit risk deterioration. (5) Controlling levels of credit risk. (6) Recognizing unacceptable risk before granting lending (7) Pinpointing late payment (8) Treating credit default.

Measurement of Credit Risk includes estimating the credit scoring and the use of Altman Model for estimating credit default risks as follows (Coyle, 2000): (1) Credit scoring is a system of categorizing creditworthiness by awarding points according to certain key features of business to produce a total credit score called Z-Score, which is derived from a corporate future prediction model using key financial ratios of a bank financial statement. (2) Default Credit risk Model is based on Estimate of Linear Regression Model as follows:

$$PD=\sum nj=1\ B\ j=1\ X\ ij\ +error$$

Where PD = Probability of Default β = Beta coefficient X ij = Independent variables (3) Altman Discriminate function is a credit classification model which provides indicator of borrowers credit risk as in the equation: Z=1.2X1+ 1.4X2+3.3X3+0.6X4+1.0X5 Where: Z= credit failure ratio X1= Working capital/ total asset X2=Retained earnings/total asset X3= Earnings before interest and tax/ total asset X4=Market value of equity/book value of long terms debt X5= Sales / total asset ratio

A company is considered with no credit risk when the value of its Z-Score is 2.99 or more, it is considered risky when its Z-Score is less than 1.81 and it is considered with average credit risk when its Z-Score ranges between 1.81 and 2.99 (Ashish: 2010). *Indicators of Credit risk deterioration* include: (Coyle; 2000): (1) Customer delay in payment. (2) Lack of capital adequacy. (3) Lack of liquidity. (4) Bad report from the Credit Bureau. (5) Down rating by credit rating agencies. (6) Decline of profitability. (7) Decline in sales revenue turnover. (8) Paying high interest rate on its borrowed funds. (9) Insolvency of client. (10) Restriction of dividend or unusual dividends.

Credit risk management tackles credit default in the following manner (Al-Zbadi: 2002):(1)Rescheduling of customer debt .(2) Mitigating credit terms.(3)Extending the maturity of the credit debt. (4) Lowering interest rate.

The *overall approach to effective risk management* includes the tasks of identifying; measuring, assessing; monitoring and controlling credit risk (Basel Committee: 2000). Several instruments are used to make credit risk management more effective such as (Saunders & Cornett: 2008):(1) Hedging credit risk. (2) Credit risk premium. (3) More guarantees/ collateral. (4) Limiting the loan amount. (5) Limiting the loan period.(6) Avoiding loan for risky client.(7) Monitoring loan payment. (8) Negotiating loan when customers get into difficulty. (9) Avoiding loans for risky customer. (10) Trading off between high risk and risk premium of interest on loans. (11) Diversifying Credit Portfolio.

The CAMEL model is the most relevant to identifying the determinants of effectiveness of credit risk management (Cole, Cornyn and Günter, 1995). However, after 1997 the Model was amended as CAMELS by the addition of market sensitivity (http://www.fdic.gov/bank). The CAMEL Model rating is used by Federal Banking Supervisors and other financial supervisory agencies in USA to provide a convenient summary of bank conditions. Rating in the CAMEL Model is assigned to banks on a scale from 1 to 5 where 1 and 2 are considered low rating, 3 is considered moderate rating and 4 and 5 are considered high rating.)

5.3. Review of Previous studies in Ethiopia

1) The Study of Hagos Mirach (2010) on "Credit Management" found that the credit analysis and procedures which is being followed by the bank is lengthy and reluctant to approve adequate amount per the requisition and 84 intended purpose of the business, requiring improvement so as to speed up and satisfy the delivery of loan to its clients and become acceptable in the eyes of potential customers.

2) The study of Adela Kosa (2014) on Risk Assessment and Handling in Banking Sector: A Comparative Analysis of Government and Private Commercial Banks in Ethiopia examined that the t-test result for credit and liquidity risk shows that there is no significant difference between state owned and private banks in extent of risk while significant difference found in poor market reaction and lack of benchmarking under market risk, risk of transition to new process under operational risk and documentation risk under legal risk dimension.

3) The study of Gudata Abara(2014) on Financial performance analysis in Banking sector: in Selected commercial banks in Ethiopia showed that the selected commercial banks performed almost in same manner in terms of assets management, there is slight difference in liquidity management between the banks, profitability performance was best for Commercial bank of Ethiopia than other commercial banks between 2010-2014. The t-test result shows that there is significant difference between selected commercial banks in terms of efficiency management. The study forwarded that to be competitive and increase efficiency, banks need to focus on competitive strategies and use tight credit policy.

4) The Study of Tibebu Tefera (2011), on credit risk management and profitability Of Commercial Banks In Ethiopia explained that Credit risk management of commercial banks of Ethiopia is poor, because both higher in the management position are maximum of BA and diploma qualification as the researcher gets from the questioner collected from each banks credit risk management office. The study recommended that the Policy maker of banks (in our country NBE) need to set policy , and guidelines which force banks to think over their credit policy ,risk management policy and other related things.

6. Research methodology

6.1. Sample selection

Both private and state sectors of banks are selected. Two State owned banks such as Commercial Bank of Ethiopia and Construction and Business Bank and three private owned banks including Bank of Abyssinia, Awash International Bank and United Bank. The study has focused on state and privately owned banks for two reasons. First, banks have substantial impact on the Ethiopian economy. This will be viewed from the economic impact especially the state owned commercial banks are linked with creation of the country's development. The other practical reason is financial information about these firms is relatively easy to obtain. In addition to this, the capital of the selected banks and number of branches are determinant in such a way that they be more competitive and has distinctive capacity to influence the economy. Industry factor is controlled as all the samples belong to banking sector. Country factor is also controlled as all sample banks are domestic banks in Ethiopia. Due to control of country factor, all banks are facing similar competitive forces. The following banks are included in the study.

Table 6.1: Sample Banks

Name of bank	Ownership	Year of establishment	Number of branches
Commercial Bank of Ethiopia (CBE)	State	1963	644
Construction and Business Bank(CBB)	State	1983	32
Bank of Abyssinia(BOA)	Private	1996	47
Awash International Bank(AIB)	Private	1994	180
United Bank(UB)	Private	1998	41

Source: National bank of Ethiopia

Websites of each bank:
Commercial Bank of Ethiopia: http://www.combanketh.et/
Construction and Business Bank: http://www.cbb.com.et/Index.html
Bank of Abyssinia: http://www.bankofabyssinia.com/
Awash International Bank: http://www.awash-international-bank.com/
United Bank: http://www.unitedbank.com.et/default.aspx

The researchers followed a descriptive and analytical approach for collection and analysis of data using a questionnaire to collect the primary data, in addition to secondary data that are collected from annual reports of Ethiopian Banks.

The analysis of the characteristics of credit risk management of Ethiopian Banks is based on secondary data. While the determinants of effectiveness of credit risk management are investigated through using regression analysis for testing the research hypotheses. The questionnaire is used to collect primary data on the challenges and developing methods of effectiveness of credit risk management of Ethiopian Banks. The questionnaire consists of two parts. Part I includes 6 questions relating to personal information of respondents, while Part II includes 22 questions relating to challenges facing effectiveness of credit risk management of Ethiopian Banks (15 questions) and methods of developing the effectiveness of credit risk management of Ethiopian Banks (7 questions). The researchers distributed the questionnaire to several referees to check the validity and accuracy of the questionnaire, then tested the reliability of the questionnaire by Cronbach Alpha Coefficient which was (86%). The researchers found 70 completely filled questionnaires representing 70% of the distributed questionnaires which were analyzed by using SPSS. The tools of analysis are: frequency distribution, mean, standard deviation for descriptive analysis, besides the use of regression analysis to test research hypotheses and the use of t-statistics to detect differences in the answers of respondents.

6.2. Research Model

The research model is "**CAMEL**" which indicates the relationship between the independent variables of capital adequacy, asset quality, management soundness, earning, and liquidity, and the dependent variable of Effectiveness of credit risk management as in figure (1):

Independent variables	Dependent variables
1. **Capital Adequacy Ratio (C)**	
2. Assets Quality (A)	
3.Management Soundness (M)	**Effectiveness Of Credit Risk Management**
4. Earnings of Credit Facility (E)	
5. Liquidity (L)	
6.Bank Size(S)	

Fig. 1. Model of Determining Factors of Effectiveness of Credit Risk Management

Source: Researchers Design Based on Literature Review

The specifics of the variables used by CAMEL Model are (FDIC Banking Review: 2003):

(1) ***Capital Adequacy****:* is referred to by Basel Committee. Bank capital is absorbing the unanticipated shocks and it is a signal that the bank honors its obligations. It is measured by dividing capital to risk weighted asset and Basel Committee put the minimum capital adequacy ratio at 8%.

CA= Total Equities/Total Assets

The expected relation between capital adequacy and effectiveness of credit risk management is positive (Hakim& Neaiame: 2002).

(2) ***Asset* Quality**: determines the robustness of the financial institutions against loss of assets value as the deteriorating value of assets is the prime source of banking problems. Asset Quality may be measured by the growth of total loans as a proxy for the quality of bank's asset and the expected relation between asset quality and effectiveness of credit risk management is negative as excessive loans increase the exposure to credit default of customers (Kwan & Eisenbeis: 1997,120).

AQ= Total Loans/Total Assets

(3) ***Management Soundness*****:** is a qualitative variable that expresses the control of board of directors over the resources of the bank to protect shareholders interests. Management soundness could be measured by the asset turnover ratio, which is a proxy of management soundness that denotes bank efficiency in using assets in generating revenue.

MS= Interest Income/Total Assets

The expected relation between management soundness and effectiveness of credit risk management is positive (Rani: 2009*)*.

(4) ***Earning*** in terms of credit facilities can be measured by return on credit as reflected by interest rate.

NIM= (Interest received- Interest paid)/ Average earning assets

The expected relation between credit earning and effectiveness of credit risk management is positive (www.fdic.gov/analytical/banking/jul/footnote2.)

(5*)* ***Liquidity*****:** refers to a situation where institutions can obtain sufficient funds, either by increasing liabilities or by converting its assets quickly to cash at a reasonable cost. Liquidity is gauged by the ratio of credit facility to total deposits (Cole *et al*, 1995.

LDR= Total loan and advances/ Total deposit

Liquidity has positive relation with effectiveness of credit risk management (Hakim& Neaiame: 2002).

(6) **Bank Size** is measured in term of value of total assets (Bodla & Verma: 2009)

7. Results

7.1: Characteristics of the Study Sample

Characteristics of the respondents of the sample as in Table 7.1:

Table 7.1: Characteristics of the respondents of the sample

Variable	Categories	Frequency	Percentage
1. Type of Job	Employee Head of Section Manager Total	27 25 18 70	38.57% 35.72% 25.71% 100%
2. Qualification	Secondary Diploma Bachelor Total	5 20 45 70	7.14% 28.57% 35.71% 100%
3. Major of Study	Management Finance Accounting Economics Statistics Other Total	17 10 9 12 10 12 70	24.3% 14.3% 12.85% 17.14% 14.3% 17.14% 100%
4. Years of Experience	1-5 6-10 11-15 16-20 21 and more Total	14 18 16 12 10 70	20% 25.71% 22.85% 17.14% 14.3% 100%

Source: Researchers Computation

Analysis shows that in terms of "*Type of Jobs*", employees come first (38.57%), followed by head of section (35.72%) and then manager (25.71%). In relation to *"Qualification"* Bachelor degree comes first

(35.71%) followed by Diploma (28.57%) and then Secondary certificate (7.14%). In relation to the *"Major of Specialization*" management comes first (24.3%), followed by economics and other specializations (17.14%) then statistics and finance (14.3%) followed by accounting (12.85%). In terms of "*Years of Experience*", respondents with 6-10 years come first (25.71%) followed by 11 -15 years (22.85%) then 1 -5 years (20%) followed by 16-20 years (17.14%) then 21 and more years (14.3%).

6.2 Regression Analysis of Determinants of Effectiveness of Credit Risk Management

NPL= 0+ 1CAD + 2AQ + 3Mgmt + 4E + 5 L+ β6 S+Ɛ

β -0.377 0.972 0.661 0.320 0.246 0.933

t (-0.705 (7.209*) (1.525) (0.584) (0.440) (4.492*)

R^2 adjusted=0. 65; F=5.083*; D.W=2.55

Where NPL= is the dependent variable of nonperformance ratio as a proxy for effectiveness of credit risk management.

α= constant

β1to β7= beta coefficients for the study variables

CAD=Capital adequacy ratio

AQ=Asset Growth as a proxy of Quality of Asset.

Mgmt = The asset turnover ratio is a proxy of management soundness.

E= Ratio of Interest divided by total loans is a proxy of profitability.

L= Ratio of loans divided by deposits as a proxy for liquidity

S= Bank Size which is measured by total assets.

Ɛ= error which represents the remaining exploratory factors

Descriptive Data of Regression Analysis are shown in Table 7.2:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Mgmt	5	11.20	45.40	29.7000	12.84601
E	5	.72	3.00	2.4040	.96534
L	5	11.84	76.74	52.8972	24.65113
AQ	5	47.00	81.20	57.2000	13.65650
CAD	5	8.30	15.00	10.6600	2.61209
S	5	3519.02	68410.90	1.86664	27876.63999
NPL	5	39.60	74.40	51.1200	13.62542
Valid N (listwise)	5				

Source: Researcher's Calculation of Descriptive Regression Data

4.3 Regression coefficients of selected Banks

Table 7.3 Regression Coefficients of Selected Banks Dependent Variable (NPL)

Independent Variables	**Beta**	**t-statistics**	**F-statistics**	**R^2 Adjusted**	**D.W (Durban-Watson)**
Constant		2.070			
Mgmt	0.661	1.525			
E	0.320	0.584			
L	0.246	0.440			
CAD	-0.377	-0.705			
AQ	0.972	7.209*			
S	0.933	4.492*			
			5.083*	0.65	2.55

Source: Researchers calculation

The regression analysis shows that the adjusted R^2 (0.65) indicates that 65% of the change in the effectiveness of credit risk management is explained by the independent variables, while 35% of change in effectiveness of credit risk management is explained by other factors expressed by the residual F-Statistics (F=5.083) indicates it is significant at 5% and the regression equation explains the good fitness of the regression model. While D.W (2.546) indicates that there is no problem of autocorrelation in the regression equation.

The testing of null hypotheses is as follows: The first null hypothesis was accepted that there is no significant relation between management soundness and effectiveness of credit risk management of selected Banks as shown in coefficients(t=**1.525**) and **(β=0.661).** The second null hypothesis was accepted that there is no significant relation between earning and effectiveness of credit risk management of Selected Banks as shown in coefficients **(t=0.584)** and **(β=0.320).** The third null hypothesis was accepted that there is no significant relation between liquidity and effectiveness of credit risk management of selected Banks as in coefficient (t=**0.440**) and **(β=0.246)** denotes low explanatory of the variable. The fourth null hypothesis was accepted that there is no significant relation between capital adequacy and effectiveness of credit risk management of Selected Banks as shown in coefficients(t=**-0.705)** and **(β=-0.377)**. The fifth null hypothesis was rejected and the alternative hypothesis was accepted that there is significant relation between asset quality and effectiveness of credit risk management of Banks as shown in coefficients (t=**7.209***) and **(β=0.972)** and the relation is positive, i.e., when asset quality increases, effectiveness of credit risk management increases**.** The six null hypothesis was rejected and the alternative hypothesis was accepted that there is a significant relation between size of the bank and effectiveness of credit risk management of selected Banks as shown in coefficients (**t= 4.492*)** and **(β=4.492)** and the relation is positive, i.e., when bank size increases, effectiveness of credit risk management increases**.**

7.4 Analysis of Challenges of Effectiveness of Credit Risk management

The gross mean of challenges (3.337) is above average 3 on Likert Scale which indicates that Selected Banks have slightly above average challenges of effectiveness of credit risk management. The challenge " *Low Quality of Asset* " comes first with a mean (3.497), followed by the challenge "*Inadequate Training*" with a mean (3.492), followed by the challenge "*Weak Corporate Governance*" with a mean (3.482), then the challenge " *Lack of Credit Diversification* " with a mean (3.433), then the challenge " followed by *Granting High Credit Ceiling Exceeding Customer Capacity of Repayment*" with a mean (3.431), followed by the challenge "*Absence of Risk Premium on Risky loans* " with a mean (3.401), then challenge *"Obtaining Loan Guarantees at Expense of Customer Capacity of Repayment* with a mean (3.311), then the challenge "*Absence of Serious Analysis of Customers Financial Position*" with a mean (3.29), followed by the challenge "*Corruption of several Credit Officers* " with a mean (3.28), then the challenge " *Priority of Profit at Expense of Credit Safety*" with a mean (3.276). The standard deviation of challenges ranges between 1.082 and 1.333 which are medium deviations. Analysis of t-statistics shows that the coefficients are significant at level 5% with exceptions of the variable "weak corporate governance" and the variable "granting high credit ceiling" as shown in Table 7.4:

Table 7.4 Challenges of Effectiveness of Credit Risk Management in selected Ethiopian Banks

Challenges of Effective Credit Risk Management	**Mean**	**Rank**	**STD**	**t- Statistics**	**Sig.**
1. Weak Corporate Governance	3.482	3	1.230	1.553	0.0670
2. Low quality of asset.	3.497	1	1.084	9.756*	0.0210
3. Lack of Credit Diversification	3.433	4	1.334	4.303*	0.0231
4. Absence of analysis of Customers' financial position	3.29	8	1.184	8.610*	0.0350
5. Absence of Risk Premium on Risky loans	3.401	6		3.624*	0.0305
6. Corruption of a number of credit officers	3.28	9	1.263	2.529*	0.0470
7. Priority of Profit at Expense of Credit safety	3.276	10	1.242	10.156*	0.0171
8. Priority of loan guarantees at expense of customer capacity of repayment	3.311	7	1.213	9.408*	0.0240
9. Inadequate training of Credit Officers	3.492	2	1.199	2.957*	0.0465
10. Granting high credit ceiling exceeding customer capacity of repayment	3.431	5	1.127	1.086	0.0780
Gross Mean	**3.3893**				

Source: Researchers Computation

7.5 Analysis of Development Methods of Effective Credit Risk Management

The gross mean of Development Methods (3.260) is above average on Likert Scale, which indicates that selected commercial Banks require slightly above average development methods. The method "*Overall Strategy for Credit Risk Management*" comes first with a mean (3.421) followed by "*Mitigating Methods for Alleviating Credit Default Risk*" with a mean (3.374), then "*Conducting Training of Credit Officers*"

with a mean (3.240), followed by *"Exchange of Information with Other Banks and Credit Bureau on risky customers* " with a mean (3.226), then *"Granting Incentives for Best Credit Risk Managers*" with a mean (3.125). The standard deviation of development methods ranges between 1.061 and 1.215 which are medium deviations. Analysis of t-statistics shows that variables 1, 4, and 5 are significant at 5%, which indicates that there are significant differences among respondents' while the other 3 variables are not significant with no significant differences among respondents' answers as in Table 7.5:

Table 7.5 Methods of Developing Effectiveness of Credit Risk Management

Methods of Developing Effective Credit Risk Management	**Mean**	**Rank**	**STD**	**t- Statistics**	**Sig.**
1. Conducting Training of Credit Officers on new techniques of credit risk Management	3.240	4	1.061	4.166*	0.0244
2. Preparation of an Overall Strategy for Credit Risk Management	3.421	1	1.004	1.680	0.0541
3. Development Mitigating Methods for Alleviating Credit Default risk according to best practices	3.374	2	1.197	1.388	0.0706
4. Granting Incentives for best credit risk managers	3.125	7	1.212	5.016*	0.0171
5. Submitting periodical Reports to Board of Directors on Credit Risk Management	3.187	6	1.115	3.943*	0.0268
6. Exchange of Information with other banks and the Credit Bureau on risky customers	3.226	5	1.203	1.313	0.0746
Gross Mean	**3.262**				

***Significant at 5%**

Source: Researchers Computation

8. Conclusions & Recommendations

8.1. Conclusions

The study aims at investigating determinants, challenges and development methods of effectiveness of credit risk managements of some selected commercial banks operating in Ethiopia The methodology is descriptive and analytical using "CAMEL" Model for analyzing effectiveness of credit risk management. The findings on the determinants of effectiveness of credit risk management of selected banks are: liquidity has significant strong positive impact on effectiveness of credit risk management of selected Banks, besides the bank size which has significant strong and negative impact on effectiveness of credit risk management of Commercial banks. While the other variables of capital adequacy, asset quality, management soundness and earning have insignificant impact on effectiveness of credit risk management.

The Study *Findings on the challenges of effectiveness of credit risk management* of selected banks, in sequent importance, are: low quality of assets; inadequate training; weak corporate governance; lack of credit diversification; granting a credit ceiling exceeding customer capacity of repayment; absence of risk premium on risky loans; priority of loan guarantees at expense of customer repayment capacity; absence of serious analysis of customers' financial position; corruption of some credit officers and priority of profit at expense of credit safety. The study *findings on developing effectiveness of credit risk management* in selected Ethiopian Banks, in sequence importance, are: Having an overall strategy for credit risk management; adopting mitigating methods for alleviating credit default risk; adopting Basel

Committee principles; conducting training of credit officers; exchange of information with other banks on risky customers; submitting periodic reports to board of directors and granting incentives for the best credit risk managers.

8.2 Recommendations

The Study *Recommendations* are: (1) Selected Commercial Banks should have an overall comprehensive strategy of credit risk management based on enhancing capital adequacy, upgrading asset quality, strengthening management soundness, increasing earnings, having adequate liquidity and reducing sensitivity to market risk (2) Selected Commercial Banks should adopt sophisticated mitigating techniques of credit risk that include hedging credit risk; having adequate provisions for doubtful credit; renegotiating loan terms for insolvent customers, transferring credit risk to a third party, rescheduling customer credit, extending credit maturity, lowering interest rate on credit and partial writes off default credit. (3) Banks are advised to strengthen the role of the credit risk committee.

Bibliography

Adela Kosa (2014), *Risk Assessment and Handling in Banking Sector*: A Comparative Analysis of Government and Private Commercial Banks in Ethiopia.
Al-Tamimi, Hussein A. & Al-Mazrooei, Faris. M (2007). Banks Risk Management: A Comparison Study of UAE National and Foreign Banks. *The Journal of Risk Finance,* vol.no.8 no.4.pp:394-409.

Asli Kunt &Enrica Detragiach (2010). *Basel Core Principles and Bank Risk*: Does Compliance Matter? IMF Working Paper no. WP/10/81.

Basel committee (2000). *Principles for the Management of Credit Risk*. Basel Switzerland. Basel Committee(1999). *Principles for Management of Credit Risk on Banking Supervision*, July. Basel, Switzerland.

Bodla, B S ,Verma Richa (2009). Credit Risk Management Frame Work at Banks in India the .*Icfai Journal of Bank Management,* University Press

Cole, Cornyn &Günter (1995). *Report on the Development of the Federal Reserve systems*, failure prediction and camel prediction model

Coyle, Brian(2000). *Bank Finance*. Financial world publishing.Kent.Uk.

Espinoza, Raphael and Prassad Ananthakrishnan (2010). Nonperforming Loans in the GCC Banking System and their Macroeconomic Effects, *An IMF working paper*. no. WP/10/224 Espinoza Raphael, Prosad Ananthakrishnan and Oral Williams (2010). Regional Financial Integration of GCC. *A working paper of IMF*, No. WP/10/90"

FDIC Banking Review (2003) failure prediction and CAMEL prediction model.(http://www.fdic.gov/bank/analytical/banking/2003jul/footnote s2.html)

Gudata Abara, 2015. "Research on "Financial performance analysis in banking sector (in selected commercial banks in Ethiopia)", *International Journal of Current Research*, 7, (10), 21883-21886. *Or Available online at http://www.journalcra.com,* ISSN: 0975-833X

Hagos Mirach (2010), *Credit Management*: The case of Wegagen Bank, Mekelle University, Ethiopia, Unpublished

Hakim, Sam & Neaime, Simon (2002). Performance &Credit Risk in Banking: A Comparison Study for Egypt and Lebanon. *Economic Research Forum* (www.erf.org.eg)

IMF (2010). *Non-Performing Loans of Gulf Banks and Their Reflections on Macro economies* of *Gulf States*. Washington. http//:www.aleqt.com/2009/7/9_5719.

IMF (2010). The GCC Banking Sector: *Topography and Analysis*. Prepared by Abdullah Al-Hassan, May Khamis and Nada Oulidi, No. WP\10\87. Washington

IMF (2009). *Recent Advances in Credit Risk Modeling*" prepared by C. Capuano, J. Chan-Lau, G. Gasha, C. Medeiros, A.Santos and .Souto.WP/09/162.

Kwan, Simon & Eisenbeis Robert (1997). Bank Risk, Capitalization and Operating Efficiency. *Journal of Financial Services Research*, no.12, Kluwer Academic Publishers.pp:117-131.

Rani ,Poonam (2009). *A Study of the Strengths of Using CAMELS Frame work as a Tool of Performance Evaluation for Banking Institutions*. Regional Institute of Management and Technology at Punjab Technical University. Jalandhar.

Rudra, Sensarma & Jayadev.M. M (2009). Are Banks Stocks Sensitive to Risk Management? *The Journal of Risk Finance*, Vol.10 No.1 pp: 7- 22 Emerald Group Publishing LTD. Saudi Arab Monetary Agency. SAMA (2010). Annual Report No. 46.

Saunders, Antony & Cornett, Marcia (2008). *Financial institutions management*: a risk management approach. Mc Graw Hill. New York.

Salas, V & Surina .J (2002) Credit Risk In Two institutional Regime: Spanish Commercial and Saving Banks. *Journal of Financial Services Resarch*.Vol.22.No.3.pp203-216.

Tadawol Bulletin (2010). Indicators of Stocks on 9/10/2010. *Saudi Financial Market*. Tadawol Financial Magazine (2010). *Saudi Economic Indicators*. Riyadh. Issue no.27 of January 2, 2010.

Tibebu Tefera (2011). *Credit Risk Management and Profitability of Commercial Banks In Ethiopia*, Addis Ababa University, Unpublished