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Impact and Efficacy of Credit Risk Management on Financial Health of Banks in Bangladesh: An Empirical Investigation

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Abstract: Credit risk management has become a crucial factor for financial institutions, especially for banks, since financial services sectors have become more exposed towards uncertainty. Bank is the financial institution which is more exposed towards credit risk compared to NBFIs. The research objective is formulated in order to obtain a better understanding of credit risk management and its impact on bank's performance (return on equity). The hinge of this study is to have a transparent view of how banks manage their credit risk and how the efficiency of managing this risk is being reflected by the financial performance of banks. We also compared the NPL with total loan outstanding using 5 year's data starting from 2011-2015. To dig deeper survey was conducted on 12 banks (6 state owned and 6 private commercial banks which were selected randomly). From each bank 10 respondents helped us to gather information. Different statistical tools have been used such as mean, standard deviation, regression analysis, one way ANOVA etc. The trend between NPL to loans ratio and ROE has also been shown to reveal the recent scenario. Principal component analysis has been used for analysis of primary data. The aim of the research is to provide stakeholders with precise information regarding the credit risk management of commercial banks with its impact on profitability (ROE).
Keywords: Credit Risk Management, NPL, ROE, State Owned Commercial Banks, Private Commercial Banks.

INTRODUCTION

In this modern era, the most promising institution of any economy is bank. Modern trade and commerce would almost be impossible without any availability of banking services [1]. At the beginning of it's birth, banks provided only credit. The business of providing credit became so profitable that banks started collecting deposit from mass people so that they can provide more credit. So, it is easily assumable that the core function of bank is providing credit. Banking activity is unavoidably exposed to huge credit risk which might lead to financial distress including bankruptcy. The Basel Committee on Banking Supervision [2] defined credit risk as the probability that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms or the possibility of losing the outstanding loan partially or totally due to credit events [3]. For the survival, growth and development of banks adequate management of credit risk is crucial. This study is going to focus on how proper management of credit risk can pamper up the financial performance of banks existing in Bangladesh. To reveal this we have used some statistical tools. Major outcomes, recommendations are made based on the statistical analysis.

LITERATURE REVIEW

Credit risk is defined as the potentiality that some of a bank's assets, especially its loans and advances, will decline in value. Management of credit risk is too crucial and central to the health of a bank and indeed the entire financial system. As banks make loans and advances, they need to make provisions for loan losses. The higher the provision is, relative to the size of total loans, the more exposed is the bank towards credit risk. An indicator that the bank's assets are becoming more difficult to collect is an increase in the value of the provision for loan losses relative to total loans is [4].

Nikolaidou & Vogiazas [5] define credit risk management as the combination of coordinated tasks which include controlling and directing risks tackled by an organization through the incorporation of key risk management method aiming to achieve the organization's objectives. Ross *et al.,* [6] argued that risk management practices also indicate that financial

institutions must have strong and rational framework for decision making by which firm's objectives can be attained [6]. On the contrary, García *et al*., [7] noticed that effective credit risk management practices have been unsuccessful to get rid of the human element in making decisions about handling risk.

Kolapo, Ayeni and Ojo [8] used panel data regression for the time frame of 2000 to 2010 and found that the effect of credit risk on bank's performance measured by the Return on Asset (ROA) of banks is cross sectionally invariant. Poudel [9] appraised the impact of the credit risk management in bank's financial performance in Nepal using time series data from 2001 to 2011. The findings of the study indicate that credit risk management is a significant variable of bank's financial performance.

Epure and Lafuente [10] analyzed bank performance for Costa-Rican banking industry during 1998-2007. The findings revealed that performance up gradations follow regulatory reforms and return on assets while the capital adequacy ratio has a optimistic impact on the net interest margin.

There have been arguements on the impact of credit risk management and bank's financial performance. Some scholars e.g., [11-13, 8, 14] amongst others have carried out wide-ranging studies on this very topic and found out mixed results; while some found that credit risk management and banks financial performance are positively related, while some found negative relationship.

Kargi [14] found in a study of Nigeria banks from 2004 to 2008 that there is a noteworthy relationship between banks performance and credit risk management. He found that major variables that determine asset quality of a bank are loans and advances and non-performing loans.

Chijoriga [15] suggests that credit risk is most vital and expensive risk associated with FIs. It is the most significant risk towards which FIs are more exposed to compare to any other risk. Credit risk is not only directly connected to solvency but its magnitude and level of loss is severe compared to other risks faced by an FI [16, 15].

Overabundance of studies on credit risk and performance of banks have been advanced in economic literature noticeable are Kargi [14] evaluated the impact of credit risk on the profitability of Nigerian banks. Bank's performance was measured by financial ratios and credit risk were collected from the annual reports of sampled banks from 2004-2008 and scrutinized using descriptive, correlation and regression analysis. The findings showed that credit risk management has a significant impact on the profitability.

Felix and Claudine [17] dig deeper into the relationship between bank performance and credit risk management. Their findings indicated that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decrease in profitability.

Credit management is the mechanism by which one collects and controls the payments from the customers. Myers and Brealey [18] described credit management as tools adopted by a bank to ensure that they maintain an optimal level of credit and its effectual management.

Many entities face liquidity and insufficient working capital problems due to sloppy credit standards and ineffective credit policies. According to Pike and Neale [19], a sound credit policy is the blueprint for how the company communicates with and treats its customers. Scheufler [20] claims that a credit policy creates a common set of objectives for the Financial Institution and recognizes the credit and collection department as an important contributor to the organization's strategies.

If the credit policy is correctly planned, carried out and well understood at all levels of the FI, it permits management to maintain proper standards of the bank loans to avoid superfluous risks and correctly assess the chances for bank's development.

Objectives of the Study

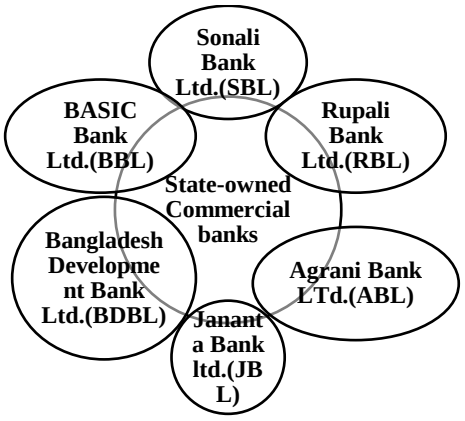
Objectives of this paper are:

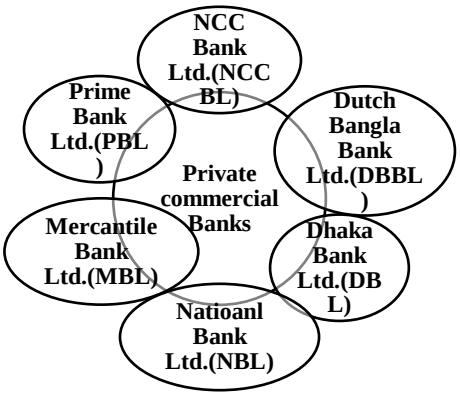
- To measure the effectiveness of Credit risk management in banking sector of Bangladesh.
- To focus on the impact of Credit risk management on profitability.
- To make a comparison between state-owned banks and private commercial banks in terms of efficiency of credit risk management.

RESEARCH METHODOLOGY

Data collection procedure

For the study we have selected all 6 state-owned banks and randomly 6 private commercial banks among 48 commercial banks including local, foreign and Islamic commercial banks (Wikipedia).





We have collected 5 years data (2011-2015)from annual audited financial statements of the sample banks from both public and private sectors such as total deposits, total loans and advances, profit after taxes, total assets, non-performing loans (NPLs), NPI to total loans and advances, and Return on Equity(ROE)from the selected banks of each category.

The study is based on both qualitative and quantitative data which is collected from annual audited financial statements of the sample banks. Different articles and websites of the selected sample banks are used as secondary source of data.

For the study, a structured questionnaire was given to collect data, which is considered as a primary source of data. A non-comparative scale questionnaire has created by using a five-degree likert scale consisting of such values;

Scale	1	2	3	4	5
Label	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Since the study is concerned with the banking industry, all the bank employees of Commercial banks in Bangladesh are potentially constituted the sampling frame as a population. For the survey questionnaires were given to the 120 bank personnel of selected 12 commercial banks 10 respondents from each banks.

Table-1: Demographic Information of the Respondent

Gender:	Male	Female			
	82	38			
Age	25-34 years	35-44 years	45-54 years	55 years and above	
	66	41	12	1	
Working experiences	Less than 1 year	1-3 years	4-6 years	7-9 years	10 years & above
	5	16	40	28	31

The secondary data which is used in this research is quantitative in nature. Different articles and websites of the selected sample banks are used as secondary source of data.

Instrumentation

To justify the research following factors has been selected;

- Credit Analysis and loan monitoring.
- Diversification of funds.
- Credit worthiness of Borrowers.
- Good governance.
- Financial benefits of Disbursed credit.
- Bureaucratic impact.
- Changes in economic and political environment.
- Better credit risk management and financial performance.
- Intention of taking high risks.
- Lack of informed credit decision making.

For the study we used descriptive statistics, ranking factors and factor analysis techniques using varimax rotation. KMO test has been used to verify reliability. For all the analysis SPSS 16.0 has been used. Graphical presentation has also shown to focus on the trend of NPL and other variables. For the analysis ANOVA (one way) is also used to check consistency and stability of different variables used in analysis. For the analysis regression analysis has also used in analysis. For this following variables are selected;

Dependent variable for each categories: Return on equity (ROE)

Independent variable: NPL to total Loans and advances

Research Hypothesis

H_0: There is no significant relationship between selected variables and effectiveness of Credit risk management.

H_1: There is a significant relationship between selected variables and effectiveness of Credit risk management.

For ANOVA (one-way) following hypothesis has been established:

H_0: NPL to loan ratio is equal in both sectors.

H_1: NPL to loan ratio is not equal in both sectors.

For regression analysisfollowing hypothesis has been established

H_0: There is no significant relationship between NPL to Loans ratio and ROE.

H_1: There is a significant relationship between NPL to Loans ratio and ROE.

ANALYSIS AND RESULTS

Table-2: Descriptive Statistics

	Mean	Std. Deviation	Analysis N	Rank of Mean values
Credit Analysis and loan monitoring are poor	2.4667	1.30244	120	10
Funds are being diversified in profitable sectors	3.8417	.93482	120	4
Credit worthiness of Borrowers are analyzed properly	3.9583	1.08771	120	2
Good governance prevails in the organization and it has a positive impact on NPL	3.5167	1.06102	120	6
Disbursed credit are not always financially beneficial	2.9833	1.10752	120	9
Bureaucratic impact prevails in credit approval	3.2417	1.15951	120	8
Changes in economic and political environment have an impact on NPL	3.8250	.83679	120	5
Better credit risk management and financial performance are positively related	3.8917	1.01083	120	3
Intention of taking high risks has a negative impact on financial performance	3.4750	1.01222	120	7
Lack of informed credit decision making can result into poor financial performance	4.3583	.56205	120	1

It can be said from the Table-2, Lack of informed credit decision making has got the uppermost influence with the highest mean and Credit Analysis and loan monitoring is considered as less important factor with the lowest mean. The ranking based on importance of rest of the factors have also shown.

Table-3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.650
Bartlett's Test of Sphericity	Approx. Chi-Square	113.097
	Df	45
	Sig.	.000

Sufficient correlation has shown among the variables as the statistic of Kaiser-Meyer-Olkin measure of sample adequacy for individual variance is found 0.650 which shows data set is appropriate for further analysis. Bartlett's test for sphericity has also shown that the overall significance of the correlation matrices is acceptable, considering the value of significance.

Table-4: Communalities

	Initial	Extraction
Credit Analysis and loan monitoring are poor	1.000	.578
Funds are being diversified in profitable sectors	1.000	.837
Credit worthiness of Borrowers are analyzed properly	1.000	.491
Good governance prevails in the organization and it has a positive impact on NPL	1.000	.638
Disbursed credit are not always financially beneficial	1.000	.749
Bureaucratic impact prevails in credit approval	1.000	.613
Changes in economic and political environment have an impact on NPL	1.000	.616
Better credit risk management and financial performance are positively related	1.000	.575
Intention of taking high risks has a negative impact on financial performance	1.000	.909
Lack of informed credit decision making can result into poor financial performance	1.000	.820
Extraction Method: Principal Component Analysis.		

Source: Field survey, 2017

The Table-4 shows that after 3 factors are extracted and retained in rotated component matrix the community is 0.578 for 1st variable, 0.837 for 2nd variable and so on. It is considered that extracted values of communalities need to be more than 0.5 for the accuracy of the data analysis. Most of the extracted values are more than 0.5 except the creditworthiness of borrowers which is good for the study.

Table-5: Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Credit Analysis and loan monitoring are poor		.313	.276	.157	
Funds are being diversified in profitable sectors	.033	.040	.114	.905	.060
Credit worthiness of Borrowers are analyzed properly	.337		.024		.328
Good governance prevails in the organization and it has a positive impact on NPL	.667	.017	.328		.261
Disbursed credit are not always financially beneficial	.194	.759	.299		.079
Bureaucratic impact prevails in credit approval		.668		.196	
Changes in economic and political environment have an impact on NPL	.749	.167		.074	
Better credit risk management and financial performance are positively related	.585			.299	.051
Intention of taking high risks has a negative impact on financial performance				.085	.947
Lack of informed credit decision making can result into poor financial performance			.888	.131	
Eigen Value	1.917	1.496	1.186	1.119	1.108
Variance explained (%)	19.165	14.964	11.864	11.192	11.077
Cumulative variance explained (%)	19.165	34.130	45.993	57.185	68.262
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 15 iterations.					

Source: Field survey, 2017

Table-5 shows the first factor includes 6 sub-factors and it can be seen that among these Changes in economic and political environment has got the highest importance and diversification of funds has got the lowest importance. The second factor also includes 6 sub-factors and it is found that financial benefits of disbursed credit has got the highest importance and diversification in funds has got the lowest importance. The third factor includes 6 sub-factors as well. The fourth factor includes 7 factors and fifth factor includes 6 sub-factors.

Table-6: ANOVA (One-way)

NPLR					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.715	1	1.715	24.331	.000
Within Groups	4.088	58	.070		
Total	5.803	59			

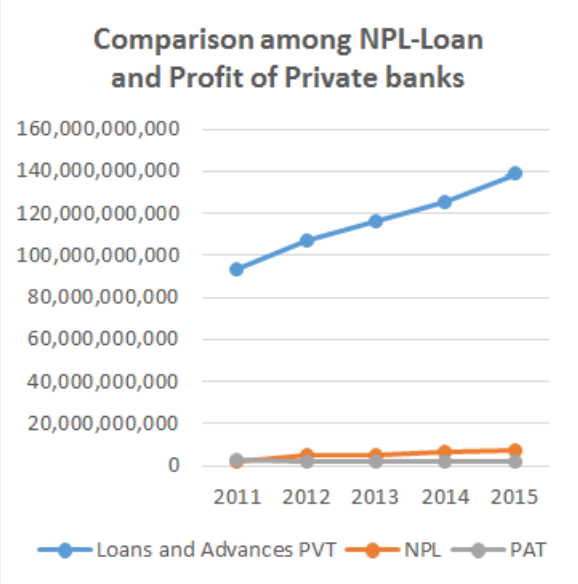
As the calculated value i.e. F=24.331 is larger than critical value 2.866081 (table value) at 5% level of significance, statistically significant difference is seen. There is no support available to accept the null hypothesis which means NPLs is not equal in both sectors.

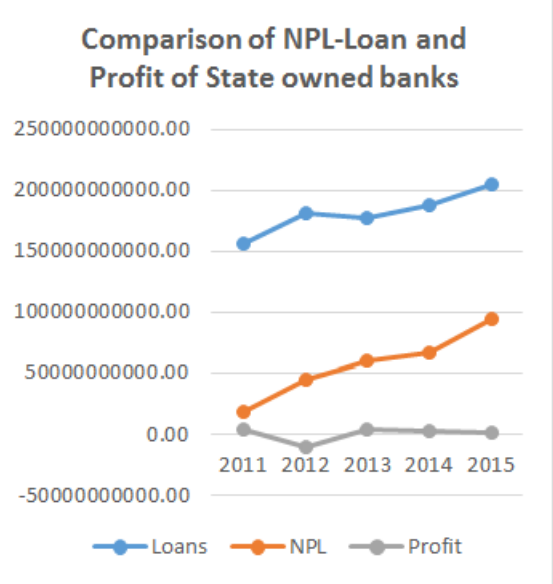
Table-7: Results of Regression Analysis

Type of bank	Private commercial banks	State-owned commercial banks
Dependent Variable	ROE	ROE
Independent variable	NPL to loan ratio	NPL to loan ratio
N	5	5
R^2	0.875	0.154
D-test	2.650	2.855
t-test	-3.135	0.738
Sig.	.052	.514
F-test	9.827	0.545
Sig.	.052	.514
Beta	-0.875	0.392
Relationship	Negative	Positive

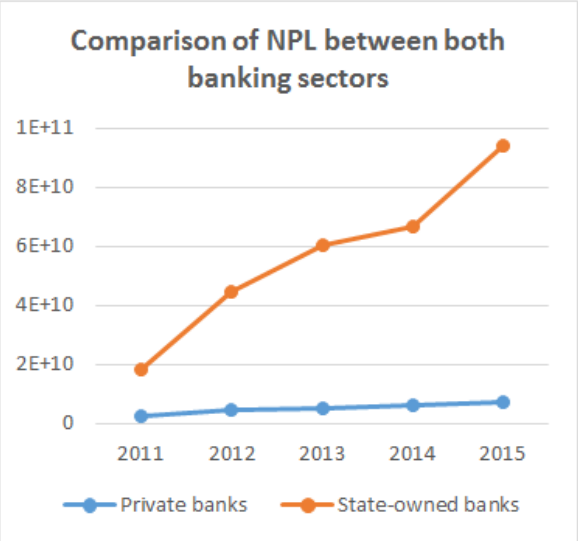
In here our dependent variable is ROE and Independent Variable is NPL to Loan ratio. In case of private commercial banks the relationship between them is negative and significant. But in case of state owned banks the relationship is positive but insignificant because in this sector both NPL to loan ratio and ROE increased/decreased in a positive way.

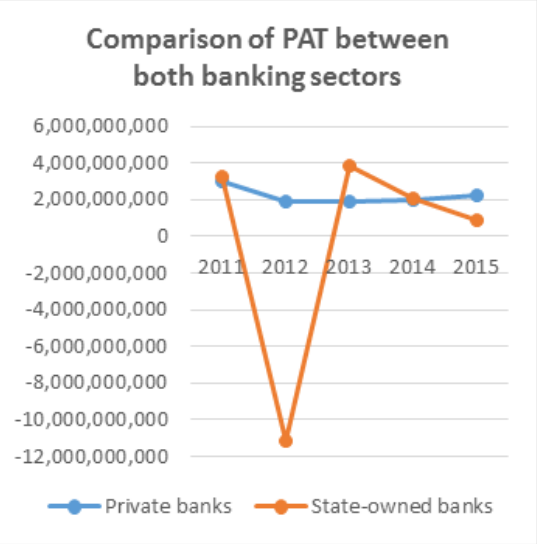
Comparison and contrast





The graphs show that loans in private commercial banks are in increasing trend. NPL and profit after tax is almost constant. But there are deviations in loans and advances of state owned banks. NPL of state owned banks is increasing .Profit of State owned banks decreased in 2012, it increased in 2013, then it also declined and this trend continued till 2015.





The graphs show that NPL of state owned banks are increasing but it is constant in case of private banks. There are fluctuation in PAT of state owned banks. But PAT has been almost constant during the last 5 years in case of private banks.

Annexure-I

Average NPL for 5 years		
Year	Private banks	State-owned banks
2011	2334491669	18,418,349,441
2012	4743609475	44,681,117,932
2013	5091301915	60,317,708,602
2014	6364998555	66,614,432,056
2015	7243417767	93,938,919,433

Annexure-II

Average Profit after tax for 5 years		
Year	Private banks	State-owned banks
2011	2,995,368,056	3,256,741,619
2012	1,873,686,187	-11,124,890,778
2013	1,906,343,991	3,873,330,186
2014	2,002,539,296	2,050,580,203
2015	2,246,603,982	857,674,691

Annexure-III

Data for regression analysis in state-owned banks		
Year	NPL to loan	ROE
2011.0	12.8	12.0
2012.0	24.0	-78.0
2013.0	54.0	17.0
2014.0	52.0	4.2
2015.0	48.0	1.75

Annexure-IV

Data for regression analysis in private banks		
Year	NPL-to -loans	ROE
2011.0	2.49	23.0
2012.0	4.4	12.0
2013.0	4.0	12.0
2014.0	5.0	12.0
2015.0	4.0	11.0

CONCLUSION

The overall study shows that the relationship between NPL and Profitability are strongly significant in case of private commercial banks whereas the relationship of these two factors is not significant in case of state-owned commercial banks. Our analysis shows that in case of state-owned banks there is no significant impact of credit risk management but credit risk is properly handled or managed by the private commercial banks. As our banking sector is facing vulnerability and NPL is a significant threat, so future studies may show different result. To reduce the vulnerability, assigned authority must look forward to reducing NPL, which is becoming a warning for Banking Industry.

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