"The effect of credit risk management on financial performance of the Jordanian commercial banks"

NUMBER OF REFERENCES

0

NUMBER OF FIGURES

0

NUMBER OF TABLES

0

Ali Sulieman Alshatti (Jordan)

The effect of credit risk management on financial performance of the Jordanian commercial banks

Abstract

This research aims at examining the effect of credit risk management on financial performance of the Jordanian commercial banks during the period (2005-2013), thirteen commercial banks have been chosen to express on the whole Jordanian commercial banks. Two mathematical models have been designed to measure this relationship, the research revealed that the credit risk management effects on financial performance of the Jordanian commercial banks as measured by ROA and ROE.

The research further concludes that the credit risk management indicators considered in this research have a significant effect on financial performance of the Jordanian commercial banks.

Based on findings, the researcher recommends banks to improve their credit risk management to achieve more profits, in that banks should take into consideration, the indicators of Non-performing loans/Gross loans, Provision for facilities loss/Net facilities and the leverage ratio that were found significant in determining credit risk management. Also, banks should establish adequate credit risk management policies by imposing strict credit estimation before granting loans to customers, and banks in designing an effective credit risk management system, need to establish a suitable credit risk environment; operating under a sound credit granting process, maintaining an appropriate credit administration that involves monitoring, processing as well as enough controls over credit risk, and banks need to put and devise strategies that will not only limit the banks exposition to credit risk but will develop performance and competitiveness of the banks.

Keywords: credit risk, financial performance, Jordanian commercial banks.
JEL Classification: F65, G21, G32.

Introduction

Banks are exposed to different types of risks, which affect the performance and activity of these banks, since the primary goal of the banking management is to maximize the shareholders' wealth, so in achieving this goal banks' managers should assess the cash flows and the assumed risks as a result of directing its financial resources in different areas of utilization.

Credit risk is one of the most significant risks that banks face, considering that granting credit is one of the main sources of income in commercial banks. Therefore, the management of the risk related to that credit affects the profitability of the banks (Li and Zou, 2014).

The importance of credit risk management in banks is due to its ability in affecting the banks' financial performance, existence and growth.

Research problem. This research tries to answer the following main question (Does the credit risk management effect on financial performance of the Jordanian commercial banks during the period (2005-2013), by answering the following questions:

1) What are the indicators of the credit risk management?
2) What are the indicators of banks' financial performance (profitability)?
3) Does the credit risk management effect on banks' financial performance (profitability)?

Research objective. The main purpose of this research is to examine the effect of the credit risk management indicators (particularly: Capital adequacy, Credit interest/Credit facilities, Facilities loss/Net facilities, Facilities loss/Gross facilities, Leverage ratio, Non-performing loans/Gross loans) on the financial performance (profitability) of the Jordanian commercial banks during the period (2005-2013). The profitability measured by (ROA) and (ROE).

Research design. The research is organized as follows: Section one presents an extensive review of literature on the impact of credit risk management on financial performance. Section two spells out the methodological approaches used in this research. While section three presents the analysis of the research hypotheses, and to show the contribution of the research results in the provision of a new addition to previous studies. Final section suggests the significance of these findings for decision makers in Jordanian commercial banks, and the recommendations reached by the researcher.

1. Literature review

This section discusses some empirical and theoretical literature on the effect of credit risk management on financial performance, and introduces an overview of Jordanian commercial banks, and lastly presents the research hypothesis.

1.1. Theoretical literature. Risk is the position where the actual return of an investment is different than expected return. Risk means the possibility of losing the original investment and the amount of interests accrued on it.

Credit risk is the risk that a borrower defaults and does not honor its obligation to service debt. It can occur when the counterpart is unable to pay or cannot pay on time (Gestel and Baesens, 2008, p. 24).

Investopedia indicates that credit risk is the risk of loss of principal or loss of a financial reward stemming from a borrower's failure to repay a loan or otherwise meet a contractual obligation. Credit risk arises whenever a borrower is expecting to use future cash flows to pay a current debt. Investors are compensated for assuming credit risk by way of interest payments from the borrower or issuer of a debt obligation, and credit risk is closely tied to the potential return of an investment, the most notable being that the yields on bonds correlate strongly to their perceived credit risk (investopedia.com).

Credit risk refers to the probability of loss due to a borrower's failure to make payments on any type of debt. Credit risk management, meanwhile, is the practice of mitigating those losses by understanding the adequacy of both a bank's capital and loan loss reserves at any given time – a process that has long been a challenge for financial institutions (sas.com).

Credit risk denotes to the risk that a borrower will default on any type of debt by failing to make required payments. The risk is primarily that of the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs (bis.org).

Effective management of credit risk is inextricable linked to the development of banking technology, which will enable to increase the speed of decision making and simultaneously reduce the cost of controlling credit risk. This requires a complete base of partners and contractors (Lapteva, 2009).

Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure banks not only support the viability and profitability of their own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki, Tsolas, and Margaritis, 2010, p. 873). "The default of a small number of customers may result in a very large loss for the bank" (Gestel & Baesems, 2008, p. 24). It has been identified by Basel Committee as a main source of risk in the early stage of Basel Accord.

1.2. Empirical review. There are numerous researches on the effect of credit risk management on financial performance, and how could the effective credit risk management assist in reducing the possibility of failure and restricting the uncertainty of achieving the required financial performance. Most of these researches support the notion that there is a positive relationship between effective credit risk management and banks' profitability, and some of these studies support the notion that there is a negative relationship between them, as follows.

Hakim and Neaime (2001) tried to examine the effect of liquidity, credit, and capital on bank performance in the banks of Egypt and Lebanon; they found that there was a sound risk management actions and application of these banks rules and laws.

Hosna Manzura and Juanjuan (2009) found that Non-performing loans indicator effected on profitability as measured by (ROE) more than capital adequacy ratio, and the effect of credit risk management on profitability was not the same for all the banks included in their study.

Njanike (2009) found that the absence of effective credit risk management led to occurrence of the banking crisis, and inadequate risk management systems caused the financial crisis.

Kithinji (2010) indicated that the larger part of the banks' profits was influenced by other variables other than credit and nonperforming loans.

Aduda and Gitonga (2011) found that the credit risk management effected on profitability at a reasonable level.

Aruwa and Musa (2012) investigated the effects of the credit risk, and other risk components on the banks' financial performance. They found a strong relationship between risk components and the banks' financial performance.

Boahene, Dasah and Agyei (2012) examined the relationship between credit risk and banks' profitability. They found a positive relationship between credit risk and bank profitability.

Gakure, Ngugi, Ndwiga and Waithaka (2012) investigated the effect of credit risk management techniques on the banks' performance of unsecured loans. They concluded that financial risk in a banking organization might result in imposition of constraints on bank's ability to meet its business objectives.

Kolapo, Ayeni and Oke (2012) showed that the effect of credit risk on bank performance measured by ROA was cross-sectional invariant, though the degree to which individual banks were affected was not captured by the method of analysis employed in the study.

Poudel (2012) explored the various credit risk management indicators that affected banks' financial performance, he found that the most indicator affected the bank financial performance was the default rate.

Musyoki and Kadubo (2012) seek to assess various parameters pertinent to credit risk management as it affects banks' financial performance. They concluded that all these parameters had an inverse

impact on banks' financial performance; however the default rate was the most predictor of bank financial performance, on the contrary of the other indicators of credit risk management.

Nawaz and Munir (2012) found that credit risk management effected on the banks' profitability, and they recommended that management should be cautious in setting up a credit policy that might not negatively affect profitability.

Abdelrahim (2013) concluded that liquidity and bank size affected strongly on effectiveness of credit risk management.

Adeusi, Akeke, Adebisi and Oladunjoye (2013) concluded that risk management indicators (doubt loans, and capital asset ratio) effected on banks performance.

Berrios (2013) showed that less discreet lending effected negatively on net interest margin.

Kaaya and Pastory (2013) showed that credit risk indicators negatively effected on the bank performance.

Ogboi and Unuafe (2013) concluded that bank's financial performance had been affected by sound credit risk management and capital adequacy.

Abiola and Olausi (2014) revealed that banks' profitability had been affected by credit risk management.

Singh (2013) revealed that Effective risk management was critical to any bank for achieving financial soundness.

Idowu and Awoyemi (2014) revealed that credit risk management had an effect on the banks' profitability.

Li and Zou (2014) found that the indicator of Non-performing loans had positive impact on banks profitability as measured by return on equity (ROE) and return on assets (ROA).

Kurawa and Garba (2014) revealed that the variables of credit risk management effected on the banks profitability.

This research improves on some of the existing studies, in that it investigates the sub-total and overall effect of credit risk management and its indicators on financial performance of Jordanian commercial banks using certain individual indicators of credit risk management.

1.3. Research hypotheses. Based on the study problem and its objectives, the hypotheses can be formulated as follows:

Ho: the credit risk management effects on financial performance (expressed by ROA and ROE) of the Jordanian commercial banks.

Subset hypothesis:

Ho1: the Capital adequacy ratio effects on financial performance.

Ho2: the Credit interest/Credit facilities ratio effects on financial performance.

Ho3: the Facilities loss/Net facilities ratio effects on financial performance.

Ho4: the Facilities loss/Gross facilities ratio effects on financial performance.

Ho5: the Leverage ratio effects on financial performance.

Ho6: the Non-performing loans/Gross loans ratio effects on financial performance.

1.4. Research features. This research improves on some of the existing researches, in that it uses a variety of credit risk management and financial performance indices to measure the effect of credit risk management on the financial performance of the Jordanian commercial banks. It also contributes to the existing literature by providing a new addition to the previous literature about the effect of credit risk management on financial performance of the Jordanian commercial banks.

2. The methodology and model

2.1. Research data. This research aims at investigating the effect of credit risk management on financial performance of the Jordanian commercial banks. Data from annual reports of the Jordanian commercial banks were used to analyze for the study years (2005-2013). The panel regression model was employed to estimate the effect of credit risk management indicators (Capital adequacy ratio (CAR), Credit interest/Credit facilities ratio, Facilities loss/Net facilities ratio, Facilities loss/Gross facilities ratio, Leverage ratio, Non-performing loans/Gross loans ratio) on the banks' financial performance.

2.2. Model specification. The following models represent the effect of credit risk management on financial performance, as follows:

$$X_1 = a_0 + a_1Y_1 + a_2Y_2 + a_3Y_3 + a_4Y_4 + a_5Y_5 + a_6Y_6, \quad (1)$$

$$X_2 = a_0 + a_1Y_1 + a_2Y_2 + a_3Y_3 + a_4Y_4 + a_5Y_5 + a_6Y_6, \quad (2)$$

where, X_1, X_2 represent the commercial banks profitability measured by ROA and ROE respectively; Y_1: The capital adequacy ratio (CAR); Y_2: Credit interests/Credit facilities ratio; Y_3: Provision for facilities loss/Net facilities ratio; Y_4: The leverage ratio; Y_5: Non-performing loans/Gross loans ratio; a_1, a_2, a_3, a_4 and a_5: represent the coefficients values of the five

independent variables, respectively; a_0: represents the value of the vertical section (and equal to the value of the dependent variables when the values of the independent variables coefficients equal to zero).

♦ The model number (1) measures the effect of the credit risk management indicators on financial performance of the Jordanian commercial banks measured by (ROA).

♦ The model number (2) measures the effect of the credit risk management indicators on financial performance of the Jordanian commercial banks measured by (ROE).

2.3. The variables operational definition. The independent variables represent the credit risk management indicators, which include the following variables:

1. The capital adequacy ratio (CAR).
2. Credit interests/Credit facilities ratio.
3. Provision for facilities loss /Net facilities ratio.
4. The leverage ratio.
5. Non-performing loans/Gross loans ratio.

The dependent variables represent the profitability measured by ROA and ROE.

Table 1. Variables definition & measurement units

No.	Abbreviation variables	Description	Measurement
1	CAR	Capital adequacy ratio	*Tier 1 capital + Tier 2 capital/Risk weighted assets*
2	CI/ CF	Credit interests/Credit facilities	Percent of credit interests have been paid on the granted facilities
3	FL/NF	Provision for facilities loss/Net facilities	Percentage of provision for facilities loss out of net facilities
4	LR	Leverage ratio	Total debt/total equity
5	NPL/GL	The level of Non-performing loans	Non-performing loans/Gross loans and advances
6	ROA	Return on assets	Net income/Total assets
7	ROE	Return on equity	Net income/Total equity

2.4. Data analysis. This research applies the descriptive, quantitative, descriptive, ratios and econometrics analysis approaches in determining the effect of credit risk management on banks' financial performance during the time period (2005-2013), including the analysis of the credit risk indicators and profitability ratios, Cross sectional analysis, regression analysis, correlation analysis, and test (F-Fisher) analysis, which are being estimated by the panel squares method (PLS), through applying the statistical program (E-Views) on the cross-sectional data relating to indicators of credit risk and profitability during the study period, based on the annual reports issued by Amman stock market, and the Jordanian commercial banks, and the relevant previous studies conducted on commercial banks and other firms in different sectors around the world. Where the research tries to investigate the overall and sub-total effect of credit risk management on banks' financial performance using certain partial indicators of credit risk.

2.5. Statistical analysis and interpretation. *2.5.1. Descriptive analysis.*

Table 2. Descriptive analysis result of the research variables

	ROA%	ROE%	Capital adequacy ratio	Credit interests/ Credit facilities	Facilities loss/ Net facilities	Leverage ratio	NPL/Gross loans
Mean	0.015167	0.110725	0.149866	11.96356	0.177606	0.856513	0.637859
Median	0.014500	0.100600	0.145100	11.88000	0.148067	0.853700	0.365298
Maximum	0.049700	0.398400	0.320600	21.43000	1.490837	0.923000	5.235032
Minimum	-0.001700	-0.014500	0.106700	0.109000	-0.955244	0.780400	0.063118
Observations	117	117	117	117	117	117	117

Source: Author computation from computer output.

Descriptive analysis of the Jordanian commercial banks included in the research as follows: Concerning the financial performance indicators, the average ROA was very low (1.5%) and the average value for ROE was (11%) indicating that most of the Jordanian commercial banks have a higher return on equity more than ROE. On average, Capital adequacy ratio equals (15%), and the Credit interests/Credit facilities is (11.96) which means commercial banks collect high interest rates on the granted facilities, while Provision for facilities loss/Net facilities equals to (18%), the Leverage ratio is (86%), Non-profit loans/Total loans and advances.

2.5.2. Multicollinearity test. The issue of multicollinearity may arise if two or more variables were to be highly correlated, and it was tested by examining the correlation matrix.

Table 3. The correlation matrix

Variables	Capital adequacy	Credit interest/ Credit facilities	Facilities loss/ Net facilities	Leverage ratio	NPL/_Gross loans_
Capital adequacy	1	-0.055662	0.055969	-0.210849	-0.157662
Credit interest/Credit facilities	-0.055662	1	-0.025731	0.018810	0.002687
Facilities loss/Net facilities	0.0559697	-0.025731	1	-0.072035	0.058486
Leverage ratio	-0.210849	0.018810	-0.072035	1	-0.117226
NPL/_Gross loans_	-0.157662	0.002687	0.058486	-0.117226	1

Source: Author computation from computer output.

The correlation coefficients matrix indicates that there is no existence of multicollinearity between the research independent variables, where the maximum correlation coefficient of 0.2108 is found via a correlation between Leverage ratio and Capital adequacy, the researcher considers this percent within the acceptable limits.

2.5.3. Unit root test results. Stationary of the explanatory variables variables and dependent variables for the research models, was tested using augmented Dickey-Fuller (ADF) test.

Table (4) views the results which indicate that the rejection of the unit root null hypothesis of the stationary of the research variables at the first level.

Table 4. The results of unit root tests

Variables	ADF statistics	*p*-value	Order of integration
Capital adequacy ratio	-10.7782	0.0000	I (1)
Credit interest/Credit facilities	-6.70991	0.0000	I (1)
Provision for facilities loss/Net facilities	-10.7027	0.0000	I (1)
Leverage ratio	-11.3797	0.0000	I (1)
Non-performing loans/Gross loans	-8.10464	0.0000	I (1)
ROA	-14.6157	0.0000	I (1)
ROE	-12.3139	0.0000	I (1)

Source: Author computation from computer output.

2.5.4. Testing for the suitability of the research models. To examine the suitability of the multiple regression models for analysis, by using the distribution (F-statistic) test, one of the following hypotheses will be rejected:

Ho: the three models are not appropriate; when the independent variables don't affect the dependent variables.

H1: the three models are appropriate; when the independent variables do affect the dependent variables.

The decision rule as follows:

Accept *H0* If (Sig. *F*) > 5%.

Accept *H1* If (Sig. *F*) < 5%.

Table 5. F-statistic values and their Sig. of the research models

Model No.	F-statistic	Sig. F-statistic	The decision
1st model	6.291839	0.00000	The model is suitable
2nd model	4.455904	0.00000	The model is suitable

Source: Author computation from computer output.

From the analysis output, the values of (Sig. F) equal to (0.000) which, and so we accept the alternative one and the models used are appropriate,

that means credit risk management has an effect on the banks' financial performance.

And the total divergence in the dependent variables explained by the independent variables (R-squared), were as follows:

Table 6. The total divergence in the dependent variables

Model No.	R-squared	Adjusted R^2	Sig.R^2	The decision
1st model	0.636498	0.531474	0.0000	Suitable
2nd model	0.727345	0.652440	0.0000	Suitable

Source: Author computation from computer output.

The total divergence in the profitability measured by ROA, due to the change in the independent variables equals to 64%, and the determination coefficient equals 53%.

The total divergence in the profitability measured by ROE, due to the change in the independent variables equals to 73%, and the determination coefficient equals 65%.

2.5.5. The correlation analysis test. To examine the correlation between the research variables, we should accept the following hypothesis:

H1: There is a statistically significant correlation between the credit risk management and profitability in the Jordanian commercial banks.

The decision rule as follows:

Accept *H0* if (Sig. R) > 5%.

Accept *H1* if (Sig. R) < 5%.

The analysis outputs show that the significant of the correlation value equals to (Sig. $R = 0.000$), and that means there is a statistically significant correlation between the credit risk management and banks financial performance.

The research hypotheses test:

To examine the total variation in each one of the two dependent variables explained by the independent variables, we accept one of the following hypotheses:

Ho: There is no statistically significant effect of credit risk management on banks financial performance.

H1: There is statistically significant effect of credit risk management on banks financial performance.

Table 7. Coefficients of the independent variables of the 1st model

Variables	Coefficients	Sig. t
Y_1	-0.005469	0.8264
Y_2	0.000136	0.5236
Y_3	-0.004443	0.0319
Y_4	-0.087751	0.0099
Y_5	0.002793	0.0025
Constant	0.088523	0.0046

Source: Author computation from computer output.

Based on the coefficients values in the table above, the regression equation of the financial performance measured by return on assets will be written as follows:

$X_1 = 0.0885 - 0.0055 (Y_1) + 0.0001 (Y_2) - 0.0044 (Y_3) - 0.0877 (Y_4) + 0.0028(Y_5)$.

When the financial performance measured by ROA, the hypotheses test shows the following results:

1. There is a positive effect of Non-performing loans/Gross loans ratio on the banks financial performance.
2. There is a negative effect of the Leverage ratio and Provision for Facilities loss/Net facilities ratio on the banks financial performance.
3. There is no effect of the Capital adequacy ratio, Credit interest/Credit facilities ratio on the banks financial performance.

Table 8. Coefficients of the independent variables of the 2nd model

Variables	Coefficients	Sig. t
Y_1	-0.198515	0.2230
Y_2	0.001770	0.3094
Y_3	-0.036168	0.0119
Y_4	0.040441	0.7944
Y_5	0.020514	0.0006
Constant	0.078002	0.0000

Source: Author computation from computer output.

Based on the coefficients values in the table above, the regression equation of the financial performance measured by return on equity will be written as follows:

$X_2 = 0.0780 - 0.1985 (Y_1) + 0.0018 (Y_2) - 0.0362 (Y_3) + 0.0404 (Y_4) + 0.0205(Y_5)$.

When the financial performance measured by ROE, the hypotheses test shows the following results:

1. There is a positive effect of Non-performing loans/Gross loans ratio on the banks financial performance.
2. There is a negative effect of the Leverage ratio and Provision for Facilities loss/Net facilities ratio on the banks financial performance.
3. There is no effect of the Capital adequacy ratio, Credit interest/Credit facilities ratio and the leverage ratio on the banks financial performance.

3. Findings

The research aims at examining the effect of credit risk management on financial performance of the Jordanian commercial banks, through identifying the indicators of credit risk and financial performance ratios during the time period (2005-2013), in that it investigates the overall and sub-total effect of the credit risk indicators on banks' financial performance using certain partial indicators of credit risk.

The empirical findings show that there is a positive effect of the credit risk indicators of Non-performing loans/Gross loans ratio on financial performance, and a negative effect of Provision for Facilities loss/ Net facilities ratio on financial performance, and no effect of the Capital adequacy ratio and the credit interest/Credit facilities ratio on banks' financial performance when measured by ROA.

This is in agreement with Li and Zou (2014) who found that Non-performing loans/Gross loans has positive effects on the financial performance of firms, as measured by ROA and ROE, and with Abdelrahim (2013) and Li and Zou (2014) who concluded in their separated studies that the capital adequacy ratio has no effect on credit risk management, and with Boahene, Dasah and Agyei (2012) who found that some of credit risk indicators have a positive effect on banks' financial performance.

But this result is contrary to Aruwa and Musa (2012) who found that the rate of capital to total weighted risk assets has a positive effect while interest rate risk affects negatively the banks'

financial performance, and Kurawa and Garba (2014) in their findings that credit risk management as measured by capital adequacy variable has a significant positive effect on the financial performance, and also is in consistence with results of Ogboi and Unuafe (2013) which revealed that effective credit risk management has a positive impact on bank's financial performance.

The researcher also found a positive effect of Non-performing loans/Gross loans ratio, and negative effect of Provision for facilities loss/Net facilities ratio on bank's financial performance, this conclusion is consistence with findings of Hosna, Manzura and Juanjuan (2009), and is on contrary to the results of Boahene, Dasah and Agyei (2012) who found that the Non-performing loan and other indicators have a positive effect on bank's financial performance.

The analysis also revealed that an effect of the Credit interest/Credit facilities ratio and the leverage ratio on bank's financial performance as measured by ROE, where this result is contrary to the findings of Ogboi and Unuafe (2013), and in agreement with Kithinji (2010) who didn't find an effect of the amount of credit and nonperforming loans on bank's financial performance.

The overall effect of the credit risk management on financial performance is statistically significant as indicated by the computed F-statistic and its probability (0.0000) of the research models. Therefore, the research submits that there is an effect of credit risk management on bank's financial performance as measured by ROA and ROE. This result is consistence with the study of Abiola and Olausi (2014), and is in agreement with Adeusi, Akeke, Adebisi and Oladunjoye (2013) who found an effect of credit risk management on the profitability as measured by ROA and ROE.

Summary and conclusions

The main purpose of this research is to investigate the effect of credit risk management on bank's financial performance, through identifying the credit risk management and financial performance indicators, and to find an empirical evidence of the degree to which credit risk management affects banks' financial performance and how the banks can enhance their financial performance ratios. There is a continuing debate about the nature and degree of the effective credit risk managementeffect on firms' profitability.

This research indicates that Non-performing loans/Gross loans ratio is employed to estimate the effectiveness and suitability of a banks' credit risk management. Amazingly, this ratio has a positive effect. This result is on contrary to what is expected of NPL ratio to have a negative effect on bank's

performance. The empirical results show a positive effect of non-performing loans on banks profitability.

This result reveals that, in spite of a large number of unpaid loans, NPL ratio has a positive effect on profitability. This means that, Jordanian banks need to establish efficient arrangements to deal with credit risk management.

The results also reveal that the Capital adequacy ratio, Credit interest/Credit facilities and the leverage ratio don't affect the profits of the Jordanian commercial banks as measured by ROE, suggesting that other variables other than Capital adequacy ratio, Credit interest/Credit facilities and the leverage ratio effect on banks' profitability. There for banks that are enthusiastic about increasing profitability should focus more on factors other than these variables.

The researcher found that the leverage ratio negatively contributes to banks' profitability, and so companies should not be highly financed by debt, because a larger financial leverage will lead to increase companies debt services and so their liabilities, which may negatively affect to companies' performance. This result is not consistence with the notion that, one of the best ways in which company increases its profit is through financial leverage. Where increasing the percent of debt in the capital structure may increase or decrease the ROE. Firm prefers debt if it achieves relatively high profits as it appears in higher returns to owners.

The researcher further concluded that the credit risk management indicators considered in this research are important variables in explaining profitability of Jordanian commercial banks. Based on findings from the empirical analysis, the study offers the following recommendations, through which they can work to improve credit risk management and to have an effective role in achieving profitability, as follows: Jordanian commercial banks should take into consideration, the indicators of Non-performing loans/Gross loans, Provision for facilities loss/Net facilities and the leverage ratio that were found significant in determining credit risk management.

Banks in order to design an effective credit risk management system need to establish a suitable credit risk environment; operating under a sound credit granting process, maintaining an appropriate credit administration that involves monitoring, processing as well as enough controls over credit risk.

Banks need to place and devise strategies that will not only limit the banks exposition to credit risk but will develop performance and competitiveness of the banks, and banks should establish a proper credit risk management strategies by conducting sound credit evaluation before granting loans to customers.

References

1. Abdelrahim, K.E. (2013). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: A Qualitative Study, *Asian Transactions on Basic and Applied Sciences*, 3 (2), pp. 73-91. Available at: http://asian-transactions.org.
2. Abiola, I. and Olausi, A.S. (2014). The Impact of Credit Risk Management on the Commercial Banks Performance in Nigeria, *International Journal of Management and Sustainability*, 3 (5), pp. 295-306. Available at: http://pakinsight.com.
3. Adeusi, S.O., Akeke, N.I., Adebisi, O.S. and Oladunjoye, O. (2013). Risk Management and Financial Performance of Banks in Nigeria, *Journal of Business and Management*, 14 (6), pp. 52-56. Available at: http://iosrjournals.org.
4. Aduda, J. and Gitonga, J. (2011). The Relationship between Credit Risk Management and Profitability Among the Commercial Banks in Kenya, *Journal of Modern Accounting and Auditing*, 7 (9), pp. 934-946. Available at: file:///C:/Users/alial_000.
5. Aruwa, S.A. and Musa, O.A. (2014). Risk components and the financial performance of deposit money in Nigeria, *International Journal of Social Sciences and Entrepreneurship*, 1 (11), pp. 1-8. Available at: http://www.ijsse.org.
6. Bank for International Settlements (2000). Principles for the Management of Credit Risk final document, Available at: http://www.bis.org.
7. Berrios, M.R. (2013). The Relationship between Bank Credit Risk and Profitability and Liquidity, *the International Journal of Business and Finance Research*, 7 (3), pp. 105-118. Available at: SSRN: http://ssrn.com/abstract=2149816.
8. Boahene, S.H., Dasah, J. and Agyei, S.K. (2012). Credit Risk and Profitability of Selected Banks in Ghana, *Research Journal of Finance and Accounting*, 3 (7), pp. 6-15. Available at: file:///C:/Users/alial_000/Downloads/2628-4635-1-PB.pdf.
9. Fan, L. and Yijun, Z. (2014). The Impact of credit risk management on profitability of commercial banks: A study of Europe, Umea School of Business and Economics: Available at: http://www.diva-portal. org.
10. Gakure, R.W., Ngugi, J.K., Ndwiga, P.M. and Waithaka, S.M. (2012). Effect of Credit Risk Management Techniques on the Performance of Unsecured Bank Loans Employed Commercial Banks in Kenya, *International Journal of Business and Social Research*, 2 (4), pp. 221-236. Available at: http://thejournalofbusiness.org.
11. Gestel, T.V. and Baesens, B. (2008). Credit Risk Management Basic Concepts: financial risk components, rating analysis, models, economic and regulatory capital, Oxford University Press.
12. Hakim, S. and Neaime, S. (2001). Performance and credit risk in banking: A comparative study for Egypt and Lebanon, Working Paper − Published by The Economic Research Forum (ERF), No. 0137. Available at: http://www.erf.org.
13. Hosna, A. and Manzura, B. and Juajuan, S. (2009). Credit risk management and profitability in commercial banks in Sweden, Master Theses. Available at: https://Gupea.ub.gu.se. Handle. Net.
14. Kaaya, I. and Pastory, D. (2013). Credit Risk and Commercial Banks Performance in Tanzania: a Panel Data Analysis, *Research Journal of Finance and Accounting*, 4 (16), pp. 55-63. Available at: www.iiste.org.
15. Kithinji, A.M. (2010). Credit risk management and profitability of commercial banks in Kenya, Working paper, School of Business − University of Nairobi, Kenya. Available at: http://erepository.uonbi.ac.ke.
16. Kolapo, T.F., Ayeni, R.K. and Oke, M.O. (2012). Credit risk and commercial banks' performance in Nigeria: A panel model approach, *Australian Journal of Business and Management Research*, 2 (2), pp. 31-38. Available at: http://ajbmr.com/article.
17. Kurawa, J.M. and Garba, S. (2014). An Evaluation of the Effect of Credit Risk Management (CRM) on the Profitability of Nigerian Banks, *Journal of Modern Accounting and Auditing*, 10 (1), pp. 104-115. Available at: http://www.academia.edu.
18. Lapteva, M.N. (2009). Credit Risk Management in the Bank, Letter from the Bank of Russia 'On typical banking risks'. Available at: https://www.google.jo.
19. Musyoki, D. and Kadubo, A.S. (2012). The impact of credit risk management on the financial performance of Banks in Kenya for the period (2000-2006), *International Journal of Business and Public Management*, 2 (2), pp. 72-80. Available at: http://mku.ac.ke/journals.
20. Nawaz, M. and Munir, S. (2012). Credit risk and the performance of Nigerian, *Interdisciplinary Journal of Contemporary Research in*, 4 (7), pp. 49-63. Available at: http://journal-archieves25.webs.com.
21. Njanike, K. (2009). The Impact of Effective Credit Risk Management on Bank Survival, *Journal of Financial Regulation and Compliance*, Working paper, Bindura University, Zimbabwe. Available at: https://ideas.repec.org.
22. Ogboi, Ch. and Unuafe, O.K. (2013). Impact of Credit Risk Management and Capital Adequacy on the Financial Performance of Commercial Banks in Nigeria, *Journal of Emerging Issues in Economics, Finance and Banking*, 2 (3), pp. 703-717. Available: http://www.globalbizresearch.com.
23. Poudel, R.P. (2012). The impact of credit risk management on financial performance of commercial banks in Nepal, *International Journal of Arts and Commerce*, 1 (5), pp. 9-15. Available at: http://www.ijac.org.uk/images.
24. Singh, A. (2013). Credit risk management in Indian commercial banks, *International Journal of Marketing, Financial Services & Management Research*, 2 (7), pp. 47-51. Available at: http://indianresearchjournals.com.
25. Tetteh, F.L. (2012). Evaluation of credit risk management practices in Ghana commercial bank limited, Master Theses, Kwame Nkrumah University of Science and Technology. Available at: http://ir.knust.edu.gh.