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# Linking Non-Performing Loans with Organizational Performance: Evidence from Banking Sector of Pakistan

***Abstract*** *The contemporary study explored the impacts of non-performing loans on banks profitability. In order to find the effects of non-performing loans on bank profitability, the study included controlled variables as deposit to total assets, liability to total assets and size of the bank. The study population comprises of Pakistani commercial banks. The study sample is made up of 10 years of data from 2006 to 2015. By testing the hypotheses, diverse econometric tests corresponding correlation, ordinary least square regression and autoregressive model were applied. The study originated a negative and significant association of non-performing loans on bank profitability. Deposit to total assets have positive, however insignificant association with bank profitability (return on asset, return on equity). Liability to total assets has negative significant relation with bank profitability. In the same way, the study also established a positive and significant relationship of the size of the bank and bank's profitability. The study also found that NPLs is negatively associated with share prices.*

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## Introduction

In Pakistan, industries and other business sectors have been mostly driven on credit facilities availing from financial institutions and banks. Thus, banks and other financial institutions play a vital role in the socio-economic development of the country economy (Nyarko-Baase, 2018). This role of banking sector is admired and influential and necessary for every country economy. It means that major portion of other industries

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are dependent on the banking sector and give financial help to those industries that need finance which ultimately leads to the survival of the Pakistani economy.

However, in Pakistan many banks face huge losses and problems due to those loans that are irrecoverable. In banks such types of possibility exist where the borrowers are unable to repay their debts which adversely affect the intermediary role of banks as well as their performance. Nowadays, the rate of such types of loans is increasing which badly affects the overall economy of the country. For smooth running of the country economy, it is mandatory that banking sector must perform well as they may able to gives loans to those sectors that need finance (Kolapo et al., 2012).

Pakistani banking sector is regulated and monitored by State Bank of Pakistan (SBP). SBP have clear instructions and guidelines to all banking sectors regarding borrowing, lending and other operations that the banks perform. However, in many cases the banking industry may not seriously follows the stated rules and regulations stated by SBP which may lead to irregular practices like non-recovery of debts.

The issue of NPLs is faced by banking and financial institutions throughout the world. It is mandatory now to introduce monitoring mechanisms to follow the borrower's activities. For developing economies, it is necessary for both lenders and borrowers to know the importance of credit risk management. In fact, the performance of financial institutions particularly banks are adversely affected by global financial crises. Poor management of loans in every country was very uneven. There are so many factors that effect NPL ratio like share price, lending interest rate and other risk factors (Rahman et al., 2011). Basel Committee on banking Supervision, 2001 define non-performing loans is the possibility that the borrower is unable to pay the whole amount or some portion of the loan. Ahmad and Ariff (2007) argued that NPL is a loan percentage that the borrower is unable to pay it within three months. A large number of NPL cases reported by banks alarm policy makers to give emphasis on credit risk management in order to avoid or minimize NPL cases and to achieve their desired targets.

The study, related to investigate the impact of credit risk or non-performing loans on banks performance, is important because it affects the intermediation role of banks which effect banks performance as well as negatively affect the overall economy (Klein, 2013). That why scholars in the field of management give immense attention to NPL and how to overcome NPLs ratio. As banking organizations measure their performance on how much they able to recover their debts and irrecoverable debts adversely affect their financial performance (Balasubramaniam, 2013). Fofack (2005) argued that NPLs have adverse effect on banks profitability and may contribute to financial distress. Khemraj and Pasha (2012) argued that in emerging economies the issue of NPLs is high and their number is increasing day by day.

## Related Literature

Panta (2018) examined the relationship of macroeconomic variables and bank specific determinants with non-performing loans and their impact on profitability. A 12 years data from 2006 to 2017 of seven joint ventures firms were selected. Data was analyzed through fixed effect model. Loan concentration, inflation and GDP growth were chosen as macroeconomic indicators while net interest margin, capital adequacy and size of the banks were chosen as bank-specific variables. NPLs was used both dependent and independent variable. Their study found that bank size and net interest margin are the main determinants of NPLs. They argued that bank size significantly related with NPLs

while net interest margin has negative but significant relation with NPLs. In the second phase NPLs, bank size and net interest margin were selected as independent variables and regressed with dependent variable profitability (ROE, ROA). It is found that NPLs has negative and significant relation with both ROA and ROE.

Kingu et al., (2018) empirically tested the impact of NPLs on banks profitability. They selected Tanzania banking industry by taking 16 commercial banks and 9 years data from 2007 to 2015. They applied OLS and penal data techniques in order to achieve the objectives. They found that NPLs has negative and significant relation with Tanzania banks profitability.

Mwinlaaru et al., (2016) examined the detrimental effect of NPLs on banks revenues as the major portion of banks incomes comes from the interest, they received from loans that enhance banks profitability as well as affect the welfare of the whole economy. They choose a quarterly data of 15 years from 2000 to 2014 of banks. They applied ARDL approach to check the long run association and co-integration technique to test the short run relation among the study variables. They found that NPLs has negative but significant relation with banks profitability both in short and long run. They recommended that banking organizations should revise their lending policy as to minimize the NPLs ratio.

Jolevski (2015) examined the relationship between NPLs and profitability of banking organizations. A 9 years data from 2007 to 2015 was analyzed. Correlation and regression analysis were performed. They found a negative and significant relation of NPLs and both indicators of profitability i.e. ROA and ROE. Correlation analysis also confirms that NPLs has negative association with profitability indicators. They suggested that management of banks should revise their lending policy as to reduce NPLs ratio. Similarly, Akter and Roy (2017) examined the relationship between NPLs and profitability in banking sector of Bangladesh. A data of 6 years from 2008 to 2013 was selected as study period. The regression results indicate that NPLs has inverse relation with profitability. They also concluded that the ratio of NPLs is very high as compared other developing economies.

Lata (2015) also explored the relationship of NPLs and profitability in Bangladesh. Their sample consists of 8 years data from 2006 to 2013 was selected. OLS technique was applied. Their study found a negative association between NPLs and profitability of banking organizations. They argued that the selected banks performance is adversely affected by NPLs and they should revisit their lending policy to minimize it.

Fredriksson and Frykstrom (2019) examined the relation of bed loans and profitability in European banking organizations. As they define that bed loans are those loans that cannot be recovered timely. Such loans restrict banks to issue new loans and ultimately affect its profitability. They argued that the ratio of bed loans has drastically increased after financial crises. Nyarko-Baasi (2018) studied the effect of NPLs on profitability of banking organizations listed at Ghana Stock Exchange. They selected four major banks based on their reputation in the market. Data from 2006 to 2015 was collected of these banks. They applied panel data approach. The results indicated that NPLs and capital adequacy ratio and ROE had significant but negative relation.

## Methodology

The population of this research study consists of those banks that are listed on Pakistan

Stock Exchange (PSX). The registered banks listed on PSX and SBP are 34. We select 22 banks as a sample based on their size, market reputations, year of operation and market capitalization. The ten-year data has been collected from these selected banks from the period of 2006 to 2015. The data is collected for the study from the official website of the selected banks and also from the PSE. The methodology of this research study includes descriptive analysis; OLS, auto regressive model and correlation were applied.

## Empirical Findings

### Correlation Analysis

Correlation matrix reported below shows the association among variables. To know about the degree of association among variables and to know the issue of multicollinearity in the data/independent variables correlation was applied. As shown all IDVs are correlated with DV ROA. The association among all IDVs is less than 0.7 indicating that there is no issue of multicollinearity. Thus, we concluded that association among variables IDVs and DV and IDVs itself are exists and up to the range which is recommended by researchers. As depicted, NPL and LTA have negative association with DV and size and DTA have positive association with DV.

**Table 1.** Correlation Matrix ROA

| | ROA | NPL | SIZE | DTA | LTA |
|---|---|---|---|---|---|
| ROA | 1 | | | | |
| NPL | -.14 | 1 | | | |
| SIZE | .48 | .20 | 1 | | |
| DTA | .16 | .32 | .30 | 1 | |
| LTA | -.18 | .28 | .49 | .48 | 1 |

Correlation matrix reported below shows the association among variables. To know about the degree of association among variables and to know the issue of multicollinearity in the data/independent variables correlation was applied. As shown all IDVs are correlated with DV ROE. The association among all IDVs is less than 0.7 indicating that there is no issue of multicollinearity. Thus, we concluded that association among variables IDVs and DV and IDVs itself are exists and up to the range which is recommended by researchers. As depicted, NPL and LTA have negative association with DV and size and DTA have positive association with DV.

**Table 2.** Correlation Matrix ROE

| | ROE | NPL | SIZE | DTA | LTA |
|---|---|---|---|---|---|
| ROE | 1 | | | | |
| NPL | -.10 | 1 | | | |
| SIZE | .46 | .20 | 1 | | |
| DTA | .13 | .32 | .30 | 1 | |
| LTA | -.19 | .28 | .49 | .48 | 1 |

Correlation matrix reported below shows the association among variables. To know about the degree of association among variables and to know the issue of multicollinearity in the data/independent variables correlation was applied. As shown all IDVs are correlated with DV SP. The association among all IDVs is less than 0.7 indicating that there is no issue of multicollinearity. Thus, we concluded that association among variables IDVs and DV and IDVs itself are exists and up to the range which is recommended by researchers. As depicted, NPL and LTA have negative association with DV and size and DTA have positive association with DV.

**Table 3.** Correlation Matrix SP

| | **SP** | **NPL** | **SIZE** | **DTA** | **LTA** |
|---|---|---|---|---|---|
| SP | 1 | | | | |
| NPL | -.11 | 1 | | | |
| SIZE | .08 | .20 | 1 | | |
| DTA | .12 | .32 | .30 | 1 | |
| LTA | .14 | .28 | .49 | .48 | 1 |

The table reported below highlights the results of ordinary least square (OLS) estimates. As there was autocorrelation issue in the data. Thus, for removal of autocorrelation problem we applied auto regressive model. The details of auto regressive model are depicted in the below table. As shown, NPL and LTA have negative but significant association with SP while size is positively and significantly related with SP and DTA has insignificant relation with SP. The value of $R^2$ is .44 indicating that the explanatory variables explain 44% variation in the DV. After applying auto regressive model the value of Durbin-Watson falls in the acceptable level i.e. 2.02, thus, confirming that autocorrelation is removed from the data.

**Table 4.** Auto Regressive Model (SP)

| | **Coeff.** | **Std. Error** | **t** | **p** |
|---|---|---|---|---|
| C | 51.34 | 211.02 | .037 | .632 |
| NPL | -7.74 | 4.01 | -1.98 | .050 |
| LTA | -1.02 | .832 | -1.94 | .063 |
| SIZE | 5.63 | 2.22 | 2.42 | .032 |
| DATA | 2.11 | .612 | 3.33 | .002 |
| AR(1) | .720 | .067 | 10.85 | .000 |

*$R^2$ = 0.47, Adj. $R^2$ = 0.45, F-Stat = 31.34, P-value = .000, DW = 1.94*

The table reported below highlights the results of ordinary least square (OLS) estimates. As there was autocorrelation issue in the data. Thus, for removal of autocorrelation problem we applied auto regressive model. The details of auto regressive model are depicted in the below table. As shown, NPL and LTA have negative but significant association with ROA while size is positively and significantly related with ROA and DTA has insignificant relation with ROA. The value of $R^2$ is .44 indicating that the explanatory variables explain 44% variation in the DV. After applying auto regressive model the value of Durbin-Watson falls in the acceptable level i.e. 2.02, thus, confirming that autocorrelation is removed from the data.

**Table 5.** Auto Regressive Model (ROA)

| | **Coeff.** | **Std. Error** | **t** | **p** |
|---|---|---|---|---|
| C | -10.76 | 2.02 | -5.35 | .000 |
| NPL | -.470 | .110 | -4.33 | .000 |
| LTA | -.071 | .038 | -1.81 | .040 |
| SIZE | 1.393 | .147 | 7.93 | .000 |
| DATA | .005 | .013 | .033 | .936 |
| AR(1) | .345 | .047 | 3.23 | .000 |

*$R^2$ = 0.44, Adj. $R^2$ = 0.43, F-Stat = 30.38, P-value = .000, DW = 2.02*

The table reported below highlights the results of ordinary least square (OLS) estimates. As there was autocorrelation issue in the data. Thus, for removal of autocorrelation problem we applied auto regressive model. The details of auto regressive model are depicted in the below table. As shown, NPL and LTA have negative but significant association with ROE while size is positively and significantly related with ROE and DTA has insignificant relation with ROE. The value of $R^2$ is .44 indicating that the explanatory variables explain 44% variation in the DV. After applying auto regressive model the value of Durbin-Watson falls in the acceptable level i.e. 2.02, thus, confirming that autocorrelation is removed from the data.

**Table 6.** Auto Regressive Model (ROE)

| | **Coeff.** | **Std. Error** | **t** | **p** |
|---|---|---|---|---|
| C | -78.96 | 13.85 | -7.27 | .000 |
| NPL | -5.01 | .748 | -5.94 | .000 |
| LTA | -.353 | .212 | -1.73 | .060 |
| SIZE | 8.70 | 1.25 | 8.65 | .000 |
| DATA | .006 | .120 | .043 | .936 |
| AR(1) | .640 | .057 | 8.94 | .000 |

*$R^2$ = 0.68, Adj. $R^2$ = 0.67, F-Stat = 87.58, P-value = .000, DW = 1.96*

## Conclusion

The study in hand examined the effect of NPLs on banks profitability in the context of Pakistan. NPLs was taken as an independent variable while share price, ROA and ROE were taken as proxy for dependent variable. Bank size, leverage to total assets (LTA) and deposit to total assets (DTA) were as control variables. For this purpose, all those commercial banks that are listed in PSX and registered in SBP were selected as a population. The sample of 22 banks out of 34 registered banks were chosen on the basis of certain dominant factors of the banks like reputation, branches network and market capitalization. A ten years data from 2009 to 2018 were gathered and analyzed in order to test the hypotheses. As shown in the previous section, all the necessary requirements for OLS were tested. Descriptive statistic was applied to know about the mean, std. deviation, maximum and minimum values of all the variables as well as any significant outliers. As there are no significant outliers in the data, thus, data have no issue of normality. Correlation analysis was applied for which confirm that our data is free from the issue of multicollinearity. As we found that there was a serious problem of autocorrelation indicated by Durbin-Watson and Bruesh-Pegan LM tests limit us to go onwards. Thus, instead of simple OLS we applied auto regressive model. After applying

auto regressive model, the issue of autocorrelation was removed. The results indicate that NPLs has negative but significant relation with share price (SP). In NPLs and SP model, other control variables including size and LTA have significant relation with SP and DTA has insignificant association with SP. Further, we also found that NPLs has negative but significant relation with ROA. In NPLs and ROA model, other control variables LTA and size have significant relation with ROA and DTA has insignificant relation with ROA. Similarly, another proxy we used to measure profitability was ROE. In case of ROE, we found that NPLs has negative and significant relation with ROE. Other control variables of the model including LTA and Size have significant relation with ROE and DTA has insignificant relation with ROE. It is confirmed from all the three models, that NPLs has significant but negative association with all proxy of profitability i.e. SP, ROA and ROE, and other control variables including LTA and Size have significant relation with all three proxies of profitability, however, DTA has insignificant relation with all three proxies of profitability i.e. SP, ROA and ROE.

Based on our findings, it is concluded that NPLs adversely affect banks performance. As the major function of commercial banks is to give loans to the needy and earns interest as well as principle amount from the borrowers, if the banks did not receive their principle amount how it successfully run their business. That is why its profitability will be affected negatively. Thus, it is concluded that banking sector must adopt latest mechanism to overcome such loans up to a minimum level as it may lead to bankruptcy and poor financial condition or financial crises. The results of the current research confirm the findings of Watson et al., (2017) as they found that NPLs negatively affect firm profitability. Cussen (2015) also found the similar results. While studying US banking industry Ghosh (2015) also have the same findings. Isik and Bolat, (2016) also concluded that NPLs adversely affect banks performance. Kirui (2014) also concluded that NPLs affect bank performance. While studying Pakistani banking organizations, Maria and Kashif (2013) concluded that irrecoverable loans have adverse effect on profitability. Cucinelli, (2015) argued that such loans give serious threats to organizations performance.

## Recommendations

Based on the empirical investigation, past literature and findings of the study, we suggest certain recommendations to banking industry and policy makers about how to control and overcome irrecoverable loans. Based on the findings, it is recommended that policy makers ensure the repayment schedule from all the borrowers. They must interview all those who borrowed money from their bank. It is also recommended that bank management must confirm the borrowers' business/project and practically see the reality. Furthermore, strict action against all those borrowers who is unable to pay the dues will be taken. Banks should ensure their repayment by taking collateral from the borrowers as in case of non-recovery they may secure their payment through the collateral. It is also recommended management should periodically review the loans applications. New financial techniques and theories must be implemented in order to secure their investment. The lending and borrowing section of all banks must aware about their actual financial position and the percentage of NPLs which make them able to batter decide about the future.

**Limitations and Future Research Direction**

The purpose of the current study is to find out the relationship between NPLs and financial and accounting performance of the Pakistani banking organizations. Although, the current study contributes to the literature in many ways, but this research has some limitation also which are considered future directions for other researchers. The data were only collected from the commercial banks and other financial institutions, microfinance banks and Islamic banks are not considered. Future researchers may work on these subsectors of the banking sector. The researchers may also work on the effect of NPLs on banking profitability across the countries. The sample we selected in the current research is only 10 years which is relatively small; in future the researchers should increase the study sample period. The current study only works on the internal or bank specific factors including Size of the banks, DTA, NPLs, LTA, ROA, ROE and SP. In future the researcher may work on the bank specific factor and also the external factors to see the effect on the performance on the banking sector.

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