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Financial Technology's Impact On The Non-Performing Loans Held By Commercial Banks In Pakistan

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Article Info

Abstract
The aim of this research is to examine how financial technology affects a commercial bank's nonperforming loan ratio. Data for this research was gathered from 15 Pakistani commercial banks using the purpose sampling approach. An index is used to assess banks' financial technology. The two control variables are GDP growth and inflation. The outcome demonstrates that the percentage of non-performing loans at banks is significantly improved by financial technology activities. As financial technology advances, Pakistan's commercial banks' nonperforming loan ratio rises. Since financial technology is enhancing banking performance, the State Bank of Pakistan need to establish rules for the adoption of financial technology by all banks and give a certain amount of investment. This study helps new academics understand the significance of financial technology in the banking industry. This research adds to the body of knowledge on financial technology in relation to commercial banks..

Keywords: *Non Performing loans, Financial Technology, Pakistan, Commercial Banks*

Introduction

Financial technology is an integral part of the banking field. It is an integration of financial and technology. Financial related to the banking sector and technology related to the automation of different procedures, software's and techniques. Due to innovations the financial sector and business environment are changing continuously. Services provided by the banks are Internet Banking, SMS and Phone banking, Fund Transfer, Online Bills Payment, access of account information everywhere, RTGS, Credit and Debit cards, and Auto and Home finances.

Customers that cannot go to the different branches can easily manage their transactions online (Ali et al., 2019). The main aim of this research is to analyze the

impact of financial technology on the performance of banking sector in Pakistan. This study confirms whether FINTECH has a significant impact or not and helps banks to manage the investment in financial technology to generate profit. The dependent variable of the study is financial performance, it is related to profitability. Different studies were based on the explanation regarding financial technology. Some of them identify the challenges and opportunities for the financial technology, the development and risk assessment techniques, identify innovative techniques and models or the future progress and opportunities in financial technology sector (Arner et al., 2015; Błach, 2011; Dorfleitner et al., 2017; Kalmykova & Ryabova, 2016; Puschmann, 2017; Schindler, 2017; Vaškelaitis, 2010; Walker, 2017). The current study attempts to expand the literature on financial technology in banks and legitimizes the connection between banks financial performance and FINTECH to guarantee that consideration is productive. This study will make a considerable theoretical contribution. Moreover, the conclusion of this study is useful for the policymakers as FINTECH has significant impact on performance then it is important for the banking sector to create awareness of FINTECH in employees and invest more to increase profitability.

The banking sector is affected by technological change and is adopting innovations to face the challenges in the market. FINTECH has changed the operations of banks and influenced overall performance, so this study is going to address main objectives. It analyses the influence of financial technology on the non-performing loans ratio of the banking sector of Pakistan.

The participants of this study are commercial banks and the data collected from these banks will not be used for the illegal purpose that harms the participants. This research is not harmful as the data of these banks is only used in this research which is useful for the banking sector.

2. Literature Review

The banking sector provides different services and products to enhance performance and profitability. Performance of the banking sector is the dependent variable of this study. Profitability can be measured using different ratios, for instance ROE, that measures the growth and profitability which is more significant than other measures. ROA is the management's capability to obtain funds for the cheaper cost and make a profitable investment. This ratio shows the profitability and income that is created through the investment in assets. The innovative financial technology, information and communication technology are playing great role in the field of financial services and minimizing the cost of financial services (Berger, 2003; Thakor, 2020; Zavolokina et al., 2016). Liquidity maximizing, increasing investment opportunities and the way of managing the risk and increasing or extending its efficiency are some benefits of FINTECH (Błach, 2011). These innovations include biometric systems, e-banking, big data and robots and artificial intelligence.

Financial technology work includes the securitization of the data, digital payments, online lending, risk management, financing and speculation and provides the new edge for the customers (Rodin et al., 2019). Financial technology have brought many deviations in the

financial services including online banking, ATM, credit cards, electronic payments and digitalization (Wonglimpiyarat, 2017). These financial services allow customers to use banking facilities at any place or time without any threat (Tam & Oliveira, 2017). The other services provided by FINTECH includes Insurance Tech, Crowd Funding, Artificial Intelligence, Big Data, Blockchain and Robo-Advisory. The development in the financial technologies extending the efficiency of the services (Brătăşanu, 2017). Benefits gained through mining and examining the data include the advantage of the improved recognition of fraud and fake data. FINTECH is also providing digital lending services for customers. Easy access to financial services through e-banking enables customers to maintain their transactions (Chawla & Joshi, 2017).

The reduction in the transaction cost allows the financial institutions to increase the adoption of new technology or FINTECH, enhance the capabilities of management and increase the size of transaction through lower cost and provide innovative and more financial services. By offering more financial services through unique models of technology banks can enhance the performance (Merton, 1995). A study conducted in Spain finds the influence of FINTECH on the financial sector performance and finds that FINTECH increase the deposits and customer also and it can create the positive impact on performance (Hernando & Nieto, 2007).

A study conducted in Kenya finds the influence of mobile banking on the banking sector performance based on the number of users and value moved on a monthly basis. The

data were collected from the period of 2007-2011 and used mobile banking as a component of financial technology and finds the impact of FINTECH on banking performance.

The outcomes report that there is a positive but insignificant impact of financial technology on banking performance (Mutua, 2013). Some studies suggest that FINTECH plays a role as an opportunity for the banking sector because this is providing unique and innovative services in cost-effective ways therefore banks can gain market share by adopting new models. Some researchers say that there is a positive relationship between the profitability and internet banking and digitalization of banking field (DeYoung, 2005; Tunay et al., 2015. Kagan et al., 2005).

A study is conducted in the Swedish through the semi structured interviews from the executives of banks shows that there is the modification in the financial industry due to the innovative technology and also has the impact on the banking sector. This study concluded that there is positive relationship between the FINTECH and the banking sector (AL Moustafa Alter Kawi & Bittar, 2019).

FINTECH have changed the traditional way of banking and has the potential to create comfort for the customers through the use of mobile banking. So, most of the literature suggesting the positive results and in Pakistan also many commercial banks

are operating under the FINTECH and this study analyze the relationship between the FINTECH and the banking sector of Pakistan. Mobile banking gaining popularity and growing to contribute the digital innovation and the technological era (Brandl & Hornuf, 2017).

FINTECH has different elements such as mobile banking, internet banking, and ATM banking. This study uses mobile banking to identify the impact of FINTECH on banks' financial performance. Mobile banking is measured through three components; total number of registered mobile account users, total number of transactions and the value of money of these transactions (Cyree et al., 2009; Mustapha, 2018).

Mobile account users represent the number of customers who use the mobile banking. Users are registered on the mobile application portal, access their bank accounts to send and receive money, check their account balance or pay bills.

Thus, the proposed hypothesis is as follows:

There is positive influence of financial technology users on the performance of banking sector of Pakistan.

3.Methodology

The quantitative methodology is superior in terms of getting a better knowledge of the research topic by employing numerical data, as stated by Mertens (2003) and Punch (2013). Data may be examined in terms of numbers, numerical procedures, and can be analyzed and interpreted via the outcomes. The current study used event study methodology. The theory and hypothesis are developed in this research and the step-by-step procedure is followed to test the hypothesis. In this research the non-probability or non-repetitive sampling technique is used through which data can be easily generalized through the use of statistical tools. This method allows you to select samples and generalization of the results is also possible. The researcher wants to evaluator judge the population elements statistically (Saunders et al., 2009).

3.1 Population and Sample

The succeeding examination is based on financial technology impact on non-performance loans in Pakistan from 2018 and 2022. According to SBP, 34 banks are operating in Pakistan. Four specialized and five foreign banks are excluded from the study, other 25 commercial banks (20 private and 5 government banks) (State Bank of Pakistan, 2019). The target population of this study are commercial banks in Pakistan and sample size is 44% of the target population. 15 out of 25 commercial banks are included in the sample because other banks have not been using mobile applications for the last 5 years.

3.2 Data and Sources of Data Collection

The Pakistan Stock Exchange and the Competition Commission of Pakistan are the sources of all of the data for the period of 2018-2022. From the annual reports and financial statements of the selected institutions, the information on the finances is acquired. Inflation and GDP data are collected from World Bank Development Indicators.

3.3 Variables

We make use of the Fintech Index (fintech) as the Fintech-specific variable, which is one of the primary factors that we include into our explanations. The Fintech Index is a reflection of the country's investment and attention to the technology of financial technology, which in turn reflects the application breadth of financial technology in financial institutions. As a result, we make use of the Fintech Index as a quantitative indicator in order to evaluate the overall progression of financial technology.

Calculating the ratio of non-performing loans to total loans for bank i in year t is the method used to determine the amount of non-performing loans.

The inflation ratio and gross domestic product are two examples of macroeconomic variables that have been included into the estimating process as control variables (also known as control variables). The inflation rate of Pakistan in year t used as the basis for the calculation of the inflation. A country's gross domestic output in a given year is referred to as its GDP.

4. Data Analysis

4.1 Analysis of Market performance

This portion of the report provided light on the deep examination of Fintech on non-performing loans in numerous methods. Firstly, this part emphasizes the descriptive statistics, then several diagnostic test for regression analysis.

Table 1 gave descriptive data about Fintech. The present research calculated data from 75 banks over the period of 5 years.

Table 1 Descriptive Summary for Non-performing Loans

Variable	N	Mean	S.D	Min	Max
NPL	75	1.38874	0.68457	0.425	5.59
Fintech	75	330.3789	338.979	8.35	885.01
Inflation	75	2.524478	1.168389	1.437025	5.553897
GDP	75	72.13766	14.07962	49.56273	93.74249

This Table provide a descriptive overview of the financial technology industry in Pakistan with regard to non-performing loans held by banks.

4.2 Collinearity

In the process of performing multiple regression analysis, the assumption that there is no check for multicollinearity is an important one. In the context of independent variables, multicollinearity refers to linear relationships between the variables. According to Gujrati and Porter (2009), when there is perfect multicollinearity, the regression coefficients continue to be indeterminate, and the standard errors associated with them are infinite on average. An examination of the pair-wise correlation between the regressors is a method that can be utilized to identify the issue of multicollinearity. In situations where there is a high zero-order correlation between two variables, multicollinearity can represent a potential issue. Because it becomes more difficult to determine which variables are responsible for explaining what, a high correlation between the variables that explain something can result in unstable coefficients and high p-values that correspond to those coefficients. Furthermore, if the degree of collinearity is high but not perfect, it is possible to estimate the regression coefficients; however, the standard errors associated with these coefficients are typically quite high (Gujrati and Porter 2009). According to Greene (2003) and Gujrati (2012), researchers have generally recommended that the relationship between variables should not exceed 70 percent. Any result that is greater than 70 percent should be cause for concern because it indicates that there is a problem with multicollinearity.

Table 2 Correlation Matrix

Variables	**(1)**	**(2)**	**(3)**	**(4)**
(1) NPL	1.000			
(2) Fintech	0.401***	1.000		
	(0.002)			
(3) Inflation	-0.597***	0.335**	1.000	
	(0.001)	(0.05)		
(4) GDP	0.157	0.294*	0.184	1.000
	(0.131)	(0.083)	(0.158)	

The Pearson correlation coefficients along with their respective significance levels are presented in this table. The symbols *, **, and *** denote statistically significant values of 10%, 5%, and 1%, respectively.

4.3 Regression Analysis for Non-Performing Loans

For the purpose of analyzing the effects that financial technology has on the percentage of loans that are considered to be non-performing, the following econometric specification, also known as a regression model, is estimated:

$$nplit = \beta 0 + \beta 1\text{Fintech}it + \beta 2\text{Inflation}t + \beta 3\text{GDP}t + \varepsilon it \quad (1)$$

the letter i stands for banks, and the letter t stands for time. It is the ratio of non-performing loans for bank i in year t that is represented by the symbol t. The term "Fintech" refers to the progression of financial technology for bank i in the year t. Control variables include the inflation ratio (Inflation$t$), and gross domestic product (GDPt). ε refers to the error term.

Table 3 Regression Analysis for Fintech

NPL	Coef.	S. Err.	value of P
Fintech	.889*	.476	.068
Inflation	.161**	.128	.015
GDP	-.382	.492	.442
Constant	1.72**	.678	.01

Mean depvar	0.481	SD. DV	0.587
R2	0.489	Number of obs	75
F-test	5.375***	Pro > F	0.000

The results of the OLS regression for NPL are shown in this table. There is a dependent variable known as NPL. Statistical analysis uses asterisks to indicate the levels of significance, with *** indicating significance at the 1% level, ** representing significance at the 5% level, and * representing significance at the 10% level.

5. Results and Discussion

In Table 3, the results of the regression for NPL are shown. There are seventy-five observations in all. In order to determine how effective the model is, the R-squared and F-value have been used. The coefficient of determination (R squared) is 0.488, which indicates that independent factors are responsible for accounting for 48 percent of the overall variance in the non-performing loans. The statistics from the F-value indicate that the overall model is significant at 1%, and it is possible that it may be exploited for more study. It is clear that there is a large and favorable association between NPL and fintech and Inflation. It represents that Fintech and Inflation increase the non-performing loans in Pakistan. GDP show an insignificant relationship with NPL. It means GDP has no influence on the non-performing loans in banks of Pakistan.

Financial technology users indicate a positive and significant impact on the non-performing loans of the banking sector in Pakistan. These results are consistent with the finding of (Mutua, 2013; Phan et al., 2020). The results suggest that the number of mobile banking users has a significant impact on the bank's non-performing loans. People are moving toward mobile banking and FINTECH, it influence the banks' performance. These results are consistent with the (Gitau, 2011; Mwange, 2013; Nyaga, 2017; Steven, 2002).

A quicker growth rate suggests that the country's macroeconomy is in a condition of rapid development, that bank operational efficiency is swiftly increasing, and that bank profitability is strengthening, which ultimately results in a reduction in the percentage of non-performing loans held by banks. When the macroeconomy is in a downturn, on the other hand, investment decreases and company activities become more

difficult to carry out. This is because it may not be feasible to repay bank loans on time, which ultimately results in a rise in the percentage of loans that are considered to be non-performing of their obligations. It may be concluded that the percentage of non-performing loans held by listed commercial banks is not substantially connected with gross domestic product (GDP).

There is a significant relationship between the money supply and the rate of inflation. The Central Bank's decision to issue more currency often results in a decline in the value of the currency as well as an increase in the rate of inflation. As a result of a country's decision to employ a loose monetary policy in order to boost the economy, banks have access to surplus liquidity and are able to provide more loans. The bank may, however, cut credit conditions in order to extend the scope of loans, which might result in projects with a larger risk of defaulting on their debts being able to secure finance. There is a general trend toward a reduction in the quality of credit assets, particularly non-performing loans. It may be concluded that there exists a positive correlation between the inflation ratio and the non-performing loan ratio of the commercial banks that are listed on the stock exchange (Michaël, 2015; Brooke and Ketchley, 2018).

5.1 Conclusion

Financial technology is an imperative part of the banking sector because innovative techniques create a competitive advantage. Mobile banking is a component of financial technology as it saves cost and time and creates efficiency in the system. The present research paper addresses the impact of Fintech Index on the non-performing loan ratio of Pakistan commercial banks. The data set of this study is 15 commercial banks from 2018-2022. The panel data regression analysis performed to find the impact and four Fintech on non-performing loans ratios of banks operating in Pakistan. According to the finding of this study, financial technology transactions have a positive impact on bank non-performing loans and the impact is significant. As the performance increased through the FINTECH transactions then it is important for the banking sector to invest in financial technology or adopt the new techniques that increase the banking sector's performance. Banks face competition in this sector as FINTECH companies are working independently and providing cheap services. The authentication of the system of financial technology makes the customer more confident in performing mobile transactions. Financial technology makes the banking sector open to experience innovative models. According to the financial intermediation theory the impact of financial technology is positive because innovative techniques reduce the cost and make financial services efficient. Theory also supports the result of this study as the impact of financial technology transactions is positive and significant.

Inflation show positive and GDP growth show a negative impact on non-performing loans. As the finding shows positive impact of financial technology transactions on commercial banks in Pakistan than commercial banks should improve the FINTECH system and increase the efficiency of the system and ensure the customer about their safe transactions. Adopting new techniques creates effectiveness in the system and also benefits the banks in terms of cost reduction. Decreasing cost of transaction for users derives profitability and performance to the positive side.

There should be regulations by the State bank of Pakistan for all banks to maintain a level of investment in FINTECH and provide financial services through mobile applications. They should maintain an optimal level of equity for increasing performance or wealth. Commercial banks should make reliable anticipation of inflation as unanticipated inflation decreases their performance. There should be Basel iii regulation for banking systems to adopt financial technology to maximize performance.

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