Research Paper

Impact of COVID-19 on Bank's Profit Earnings Process: An Overview of Selected Private Commercial Banks of Bangladesh

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ABSTRACT
COVID-19 can be undoubtedly regarded as the most horrible word for 2020. Financial sector of every economy across the whole world is being damaged because of this pandemic. It has crippled millions of families not only by killing the earning person of that family but also by snatching their earning opportunities. The situation is comparatively worse in developing countries having poor financial architecture. Condition of banks often reflect the economic condition of a nation as banks play a very important role offering a safe service to lend and borrow which assists to boost up an economy. This paper considers the impact of the COVID-19 on profitability of private commercial banks in Bangladesh. To do this, Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) of some banks have been compared over some last years and decisions have been taken by calculating paired sample t test using SPSS. Findings suggest that the loss of profit is not so much severe according to the financial reports of the selected banks. Different strategic actions are adopted by private banks guided by Bangladesh Bank which may have helped to provide almost same picture compared to previous two years. It is also true that actual situation will be realized after this year when banks will be permitted to adjust the nonperforming loans (NPLs) in their financial statements. But as lockdown has been withdrawn and cycle of economy has taken a restart, it is expected that private banks of Bangladesh will be able to overcome this critical situation by making a quick recovery of loss because of the long run pandemic situation.
Keywords: COVID-19, Lockdown, Banking Sector, Profitability, NPLs, Loan and Investment, ROA, ROE, NIM.

I. INTRODUCTION

As the financial system is the backbone of an economy, country's progress largely depends on proper functioning and accurate movements of this process. If economic activities recess, the financial system faces severe consequences. (Muhammad AL Bashir, Muhammad Al Amine, 2016) An increasing number of studies suggest that the COVID-19 pandemic has begun to ravage economies by causing a sharp damage in all sorts of macroeconomic indicators including aggregate demand, production, supply, trade flows, saving, investments, and employment, which deepen poverty and triggering a possible recession or a depression (Barua, 2020a, 2020b; Chen, Qian& Wen, 2020; Coibion, Gorodnichenko& Weber, 2020; ILO, 2020, World Bank, 2020a; OECD, 2020a; Baldwin and de Mauro, 2020). In a pandemic-ridden or a post-pandemic world, all these hits could threaten the survival and sustainability of financial institutions (FIs), financial stability and security, and regulatory discipline in countries-be it developed or developing (Stiller and Zink, 2020; FSB, 2020; BIS, 2020; Baret, Celner, O'Reilly & Shilling, 2020; Cecchetti & Schoenholtz, 2020; Mann, 2020; Beck, 2020; World Bank, 2020c; World Economic Forum, 2020).

The COVID- 19 is the scariest word for the world of 2020. After 2008-09 global financial crisis (GFC), the whole terra is facing the worst situation where lasting is the most challenging matter. The global economy is being crumbled, millions of people are becoming unbeavered every day losing their jobs and struggling hard to sustain their subsistence. Governments are imposing lockdown and restrictions on travelling both inside and outside of the countries, circumscribing the opening of restaurants as well as various socio cultural institutions

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and also finding alternative arrangements to save their compatriots from this destructive pandemic. Health sector is staving and educational system is being impaired in the entire world especially in the underdeveloped and developing countries. There is no single sector which has not been affected by this world wide disaster. (Shammi, M., Doza, M.B., Reza, A., Islam, T., Rahman, M.M., July 2020)

Bangladesh is a third world developing country. While various NGOs as well as nonbank financial institutions are playing significant role to boost up our economy, banks are still playing the role of heart to control their activities in a proper manner. So conditions of banks have a strong and positive impact on our growth and development (economicshelp.org, 2020). That's why this study has been conducted for getting an idea of how Novel Corona Virus has affected the profit generation process of private banks in Bangladesh. It may be helpful for realizing the effect of COVID-19 on the banking sector of other underdeveloped and developing countries like Bangladesh also. For determining the relationship between Covid-19 and bank's profitability, we will focus on three important ratios those are Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) as they are deliberated as well as the most important indicators of a bank's earnings.

II. OVERVIEW

In Bangladesh, the first confirmed case corona patient was reported on 8 March 2020 and then it continued to spread. On 21 December, 2020 the number of confirmed cases reached to 5, 02, 183 and the numbers of deaths were 7, 312. (worldometers, 2020)

To protect the ease spread of corona pandemic, like other affected countries, Bangladesh government declared a shutdown at first for ten days initially from 26 March to 4 April which later extended until May 30. All productive sectors were shut down, people of almost all sector face downturn flow of income. Living became more difficult which created upward pressure on savings. As a result people started to withdraw money from banks and at the same time banks faced not only crisis of loan demand but also an increased loan default rate.

Now, 10th month is running of Covid-19 in Bangladesh. As the whole economy is collapsed today because of the pandemic situation, no exceptional picture is being found in banking sector. Amount of non-performing loan is increasing at alarming rate and many banks are facing liquidity problem. To cope with this critical situation, the Central Bank has already slashed cash reserve requirements (CRR) BY 150 basis points to 4.0 percent from 5.0 percent to facilitate the banks to implement the government announced financial packages. Repo rate has already been cut by 75 basis points to 5.25 percent from 6.0 percent. (Prothom Alo, 29 April, 2020). So, it is obvious that a black shadow has been fallen down on our banks because of this corona pandemic.

III. RESEARCH QUESTIONS

A profitable banking sector is better ableto withstand negative shocks and contribute to the stability of the financial system (Jiang et. al., 2003). But it is also true that our banking sector is passing through a volatile condition for a long time. Lack of good governance, influence of government over Bangladesh Bank, money laundering, several bouts of fraudulence and malpractices have tarnished this sector very badly. (Dhaka Tribune, May 5, 2019). Poor governance in the banking sector is the reason for the increased amount of non-performing loans (NPLs). Recent interest rate cap persuades all banks to keep rate at a single digit. It also have some effects on banks profit earnings process in Bangladesh.

So, it is obvious that even before coronavirus spread to the country, banks in Bangladesh were struggling to better their poor performances. But this pandemic is worsening the whole situation. In these circumstances, the study was conducted to find out the relationship between the novel coronavirus and profitability of private commercial banks in our country. This investigation may also help to get answers to some important questions as follows–

RQ- 1: What is the banking profit earnings scenario immediate before and during the COVID19?
RQ-2: When did the adverse effect of COVID-19 on the bank's profitability was optimum?
RQ- 3: How do various steps of government as well as Bangladesh Bank have contributed to change profit earnings scenario of the banks during this epidemic?
RQ- 4: What are the specific areas that require special consideration to boost up the banking business?

IV. RESEARCH OBJECTIVES

Overall Objective
Overall objective of the study is to evaluate the impacts of COVID-19 on profit generation process in private commercial banks of Bangladesh from the evidence of five private commercial banks.

Particular Objectives
To achieve the overall objective, the following specific objectives were considered.

RO-1: To examine the impact and the patterns of profitability determinant factors before and during COVID-19 in various quarters over years in the Banks.

RO-2: To determine in which quarter of 2020 were severely affected by the ongoing COVID-19 Pandemic.

V.   SIGNIFICANCE OF THE STUDY

For a third world country like Bangladesh, where majority of people are still risk averse and below the standard educational level, investing is a very challenging concept. For accelerating the wheel of the economy, continuous circulation of money is a must and this is merely impossible without strong and effective performance of financial institutions specially banks (Franklin Allen, Elena Carletti, and Xian Gu, 2020)

Banks perform various roles in the economy. *First,* they ameliorate the information problems between investors and borrowers by monitoring the latter and ensuring a proper use of the depositors' funds. *Second,* they diversify risk related to lending and borrowing as well as provide insurance to lenders. *Third*, banks contribute to the growth of the economy. *Fourth,* they perform an important role in corporate governance. The relative importance of the different roles of banks varies substantially across countries and times but, banks are always critical to the financial system (Federal Reserve Bank of San Francisco, 2020)

So, it is clear that financial growth of a country and its banks performance have a strong positive relation. If banks fail to achieve their target profit, it will have a negative impact on economy. That's why this study has been conducted with an attempt to put light into the banks profit earnings process in Bangladesh. It will be helpful to realize; to what extent the progress of the profitability in banking sector has been hampered due to COVID-19 pandemic? It may also act as a favorable mechanism for policy making authorities like government, finance ministry and central bank to determine proper action plan which will be helpful to bring back the banking sector at its previous condition.

VI.   RELATED LITERATURE

A new coronavirus disease, now known as COVID-19, was first identified in Wuhan, China,

Nearly January 2020. The number of infected increased rapidly not only in the China but also in all over the world. This invisible virus had infected 85, 403 people in 55 economies with death of 2924 within February 2020. (Asian Development Bank, 2020).The situation had worsened day by day. The existence of every human has affected greatly. No one was really prepared for the effects of the COVID-19 crisis (Korzeb, Z., & Niedziółka, P., 2020).

Ongoing outbreak of COVID-19 has affected the whole world very badly. Economies of developing Asian countries have suffered a lot through various ways including sharp declines in domestic demand, lower tourism and business travel, trade and production linkages, supply disruptions, and health effects. Its actual impact is yet far to calculate but the global impact is suggested to be $77 billion to $347 billion or 0.1% to 0.4% of global GDP, with a moderate case estimate of $156 billion or 0.2% of global Gross Domestic Product (GDP) (Abiad, A., Arao, M., Dagli, S., Ferrarini, B., Noy, I., Osewe, P., Pagaduan, J., Park, D., Platitas, R., 2020).

Our global economy and financial sector have faced unimaginable outcomes from the pandemic. Economists believe that we are moving towards serious economic disaster. To prevent the adverse consequences that the economy, the banking sector and the people in general may face, effective measures have been taken by the governments and concerned authorities. (KPMG, 2020))

Upon being confirmed of the first case of COVID-19 in the country, the government of Bangladesh announced special ―general leave‖, starting from 26 March and later in seven different time slots, extended up to 30 May, 2020. In spite of the government's heartiest efforts to make people maintain all the preventive steps against the spread of the pandemic, the overpopulation which is 165 million in number caused the rate of corona virus infection going higher and higher with the progress of time (Shammi, Bodrud-Doza, Islam, & Rahman, 2020).

Though flows of all economic channels have been interrupted in this pandemic situation, effect is not equal for every sector. For example, the largest banks in Poland are conducting their operations at very resistant conditions while some others are at a very vulnerable situation due to this pandemic effect. (Korzeb, Z., Niedziółka, P., 2020)

As the banks regulate an economy a large extent, it is very important to know how successfully banks are operating. Many factors influence the earning ability of a bank like capital ratio, bank size as well as some external factors like per capita GDP, inflation, corruption perception index (Lohano, K., Kashif, M., 2019)

Another study over 47 commercial banks in Bangladesh within 2010-2015 indicate three different measures of profitability namely return on assets (ROA), return on equity (ROE) and net interest margin over total assets (NIM) but no significant impact of the macroeconomic variables-rate of growth of real GDP and inflation rate (Khan A. Matin.,2017)

The ROA, ROE and NIM of a bank are influenced by non-performing loan, cost to income ratio, loan to deposit ratio, commission fees, cost of fund and operating expenses, higher liquidity deposit ratio, cost of fund contribute towards profitability etc. But their impacts are not so much significant as the non-performing loan negatively affects the revenue earning capacity (Islam A. M., 2017).

There has been much talk about the banking sector as of late, mostly due to its mounting non-performing loan (NPL), lack of good governance, and influence of the government over Bangladesh Bank, money laundering, and malpractices by some bankers. These factors are affecting our efficiency and productivity, as well as constraining businesses and industries that truly do have the potential to grow.The banking sector has been tarnished many times by several bouts of fraudulence ad malpractice. Although considerable progress has been made, foreign countries see our banking activities as questionable (Dhaka Tribune, 2019)

As our banking system is already creaking under bad debt and other malpractices, now it is facing unprecedented challenges as COVID-19 is taking its toll on the economy. As main income sources like fee from exports, imports and remittances have significantly declined, it is feared that banks would record operational losses for the first half of 2020. Though Bangladesh Bank is continuously provided special guideline to fight the battle, many of them may not be proved effective in long run (Financial Express, 2020)

Before COVID-19 arrived, banks were faced problems with bad loans and other crisis that hurtled the backbone of our economy. These troubles were exacerbated by a recent move by the central bank to cap lending rates at 9%. ―The COVID-19 crisis added salt to the wound for the banking sector (Asia money, 2020)

So it is clear that banking sector of Bangladesh was facing trouble for a long period even before the COVID-19 aroused. Bangladesh Bank and Ministry of Finance have taken many steps to protect banks at the disaster period. This study has been conducted to realize the impacts of corona pandemic on profitability of private banks and to get an idea whether the condition has become worsened than before pandemic situation.

VII.   METHODOLOGY

Research Plan of Action

Acknowledging the negative effect of COVID-19 on whole economy, this research project aims to draw focus on the condition of private commercial banks due to the pandemic situation. Five private banks were selected to conduct this work. This sample selection process was purposive in nature. For comparing before and after corona situation, secondary data were collected from the respective bank's annual reports for first three quarters of 2018, 2019 and 2020. For collecting secondary data different published articles, journals and news from newspaper, internet and website of banks were investigate thoroughly to gather the data related to this study.

Data Analysis

This is a quantitative study. The statistical package for the social science (SPSS) v. 24.0 was used for analyzing data. For making data comparison, statistical tool called Paired Sample T-Test was used. The loan and investment, total equity, net interest income, ROA, ROE, NOM of different quarters were compared to take decision. Null and alternative hypothesis were set according to requirements and the analysis was performed at 5% level of significance (Gaur & Gaur, 2009).

Reliability Test

Cronbach's Alpha was used test internal reliability. The test result is given in the following table:

Table-1: Cronbach's Aplha

Reliability Statistics	
Cronbach's Alpha	No of Items
.964	63

VIII.   RESEARCH HYPOTHESIS

Based on the above research questions and objectives, the study was suggested the following alternative hypotheses:

RH-1: H_1: COVID-19 has significant effect on profit generation process of private commercial banks in Bangladesh.

RH-2: H_1: Pattern of ROA, ROE and NIM of 1st quarter, 2020 are different from 1st quarter of 2018 and 2019.

RH-3: H_1: Pattern of ROE, ROE and NIM of 2nd quarter, 2020 are different from 2nd quarter of 2018 and 2019.

RH-4: H_1: Pattern of ROE, ROE and NIM of 3^{rd}quarter, 2020 are different from 3rd quarter of 2018 and 2019.

RH-5:H_1: There is difference between profitability of three quarters of 2020.

ANALYSIS and INTERPRETATIONS

Objective-1

Table-2: Comparing Mean of NIM of different years Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Covid 19 Net Interest Margin Q1,18	.004860	5	.0030762	.0013757
	After Covid 19 Net Interest Margin Q1,20	.005640	5	.0038824	.0017363
Pair 2	Before Covid 19 Net Interest Margin Q1,19	.005960	5	.0034319	.0015348
	After Covid 19 Net Interest Margin Q1,20	.005640	5	.0038824	.0017363
Pair 3	Before Covid 19 Net Interest Margin Q2,18	.006460	5	.0025472	.0011391
	After Covid 19 Net Interest Margin Q2,20	.003260	5	.0026782	.0011977
Pair 4	Before Covid 19 Net Interest Margin Q2,19	.007040	5	.0038286	.0017122
	After Covid 19 Net Interest Margin Q2,20	.003260	5	.0026782	.0011977
Pair 5	Before Covid 19 Net Interest Margin Q3,18	.006660	5	.0035104	.0015699
	After Covid 19 Net Interest Margin Q3,20	.003440	5	.0035083	.0015689
Pair 6	Before Covid 19 Net Interest Margin Q3,19	.006680	5	.0035088	.0015692
	After Covid 19 Net Interest Margin Q3,20	.003440	5	.0035083	.0015689

The above table showed the average Net Interest Margin of the five selected banks from 1st quarter of 2018 to 3rd quarter, 2020. It helps to know how the net interest margin of banks has differed before and after COVID-19 situation. Here we see that average net interest margin was maximum in second quarter of 2019 (0.007040) and minimum in second quarter of 2020 (0.003260). This situation slightly improved in third quarter of 2020 (0.003440).

Table-3: Measuring Correlation of NIM of different quarters of 2018, 2019 and 2020
Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before Covid 19 Net Interest Margin Q1,18 & After Covid 19 Net Interest Margin Q1,20	5	.902	.037
Pair 2	Before Covid 19 Net Interest Margin Q1,19 & After Covid 19 Net Interest Margin Q1,20	5	.933	.021
Pair 3	Before Covid 19 Net Interest Margin Q2,18 & After Covid 19 Net Interest Margin Q2,20	5	.339	.577
Pair 4	Before Covid 19 Net Interest Margin Q2,19 & After Covid 19 Net Interest Margin Q2,20	5	.300	.624
Pair 5	Before Covid 19 Net Interest Margin Q3,18 & After Covid 19 Net Interest Margin Q3,20	5	.696	.191
Pair 6	Before Covid 19 Net Interest Margin Q3,19 & After Covid 19 Net Interest Margin Q3,20	5	.893	.041

The correlation between net interest margin at different quarters of before and after COVID-19 is clear from this table. This correlation is week positive in second quarter of 2020 with this quarter of 2018 and 2019. Correlation of Net Interest Margin of 2nd quarter, 2018 and of 2nd quarter 2020 is r = 0.339 and this value decreases to r = 0.330 for correlation of second quarter of 2019 and 2020. Correlation is strong positive for first quarter of 2020 with this quarter of 2018 and 2019 respectively (r = 0.902 and r = 0.933) and also for third quarter of 2019 and 2020 (r = 0.893). A moderate correlation exists between NIM of third quarter of 2018 and 2020 and it is r = 0.696.

Table-4: Calculating t value of NIM of different quarters of 2018, 2019 and 2020
Paired Samples Test

		Paired Differences					t	df	Sig. (2tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before Covid 19 Net Interest Margin Q1,18 - After Covid 19 Net Interest Margin Q1,20	-.0007800	.0017326	.0007749	-.0029313	.0013713	-1.007	4	.371
Pair 2	Before Covid 19 Net Interest Margin Q1,19 - After Covid 19 Net Interest Margin Q1,20	.0003200	.0014114	.0006312	-.0014325	.0020725	.507	4	.639
Pair 3	Before Covid 19 Net Interest Margin Q2,18 - After Covid 19 Net Interest Margin Q2,20	.0032000	.0030058	.0013442	-.0005322	.0069322	2.381	4	.076
Pair 4	Before Covid 19 Net Interest Margin Q2,19 - After Covid 19 Net Interest	.0037800	.0039594	.0017707	-.0011363	.0086963	2.135	4	.100

From the above Paired Sample Test result, details interpretation is given below:

Pair 1: H_1: NIM is different for first quarter of 2018 and first quarter of 2020.
The test result shows a t-statistics of -1.007 with 4 degrees of freedom. The two-tailed pvalue is 0.371, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average NIM is not different for first quarter of 2018 and 2020.

Pair 2: H_1: NIM is different for first quarter of 2019 and first quarter of 2020.
The test result shows a t-statistics of 0.507 with 4 degrees of freedom. The two-tailed pvalue is 0.639, which is far more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average NIM is not different for first quarter of 2019 and 2020.

Pair 3: H_1: NIM is different for second quarter of 2018 and second quarter of 2020.
The test result shows a t-statistics of 2.381 with 4 degrees of freedom. The two-tailed pvalue is 0.076, which is more than the conventional 5% level of significance. Therefore, we can slightly accept the null hypothesis at 5% significance level, which means that the average NIM is not different for second quarter of 2018 and 2019.

Pair 4: H_1: NIM is different for second quarter of 2019 and second quarter of 2020
The test result shows a t-statistics of 2.135with 4 degrees of freedom. The two-tailed pvalue is 0.100, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average NIM is not different for second quarter of 2019 and 2020.

Pair 5: H1: NIM is different for third quarter of 2018 and third quarter of 2020.
The test result shows a t-statistics of 2.633with 4 degrees of freedom. The two-tailed pvalue is .058, which is more than the conventional 5% level of significance. Therefore, we can marginally accept the null hypothesis at 5% significance level, which means that the average NIM is not different for third quarter of 2018 and 2020.

Pair 6: H_1: NIM is different for third quarter of 2019 and third quarter of 2020.

The test result shows a t-statistics of 4.473 with 4 degrees of freedom. The two-tailed pvalue is .011, which is less than the conventional 5% level of significance. Therefore, we can reject the null hypothesis at 5% significance level, which means that the average NIM is different for third quarter of 2019 and 2020.

Table-5: Comparing Mean of ROA of different years

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Covid 19 Return on Asset Q1,18	.001020	5	.0004147 .0009154	.0001855 .0004094
	After Covid 19 Return on Asset Q1,20	.001340	5		
Pair 2	Before Covid 19 Return on Asset Q1,19	.001320	5	.0007694	.0003441
	After Covid 19 Return on Asset Q1,20	.001340	5	.0009154	.0004094
Pair 3	Before Covid 19 Return on Asset Q2,18	.001540	5	.0009263	.0004142
	After Covid 19 Return on Asset Q2,20	.000540	5	.0005505	.0002462 .0004510
Pair 4	Before Covid 19 Return on Asset Q2,19	.001720	5	.0010085	
	After Covid 19 Return on Asset Q2,20	.000540	5	.0005505	.0002462
Pair 5	Before Covid 19 Return on Asset Q3,18	.001340	5	.0009711	.0004343
	After Covid 19 Return on Asset Q3,20	.000960	5	.0005727	.0002561
Pair 6	Before Covid 19 Return on Asset Q3,19	.001314	5	.0008034	.0003593
	After Covid 19 Return on Asset Q3,20	.000960	5	.0005727	.0002561

This table is showing the average ROA of the five selected banks for first three quarters of 2018, 2019 and 2020. It helps to know how the average ROA of banks have differed before and after COVID-19 situation. Here we see that average net interest margin was maximum in second quarter of 2019 (.001720) and minimum in second quarter of 2020 (.000540). This situation slightly improved in third quarter of 2020 (.000960).

Table-6: Measuring Correlation of ROA of different quarters of 2018, 2019 and 202

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before Covid 19 Return on Asset Q1,18 & After Covid 19 Return on Asset Q1,20	5	.965	.008
Pair 2	Before Covid 19 Return on Asset Q1,19 & After Covid 19 Return on Asset Q1,20	5	.957	.011
Pair 3	Before Covid 19 Return on Asset Q2,18 & After Covid 19 Return on Asset Q2,20	5	.246	.690
Pair 4	Before Covid 19 Return on Asset Q2,19 & After Covid 19 Return on Asset Q2,20	5	.422	.480
Pair 5	Before Covid 19 Return on Asset Q3,18 & After Covid 19 Return on Asset Q3,20	5	.291	.634
Pair 6	Before Covid 19 Return on Asset Q3,19 & After Covid 19 Return on Asset Q3,20	5	.395	.511

The correlation between ROA at different quarters of before and after Covid 19 is clear from this table. This correlation is very week in second quarter of 2020 with this quarter of 2018 and between third quarter of 2018 and 2020. Correlation of ROA of 2nd quarter, 2018 and of 2nd quarter 2020 is .246 and this value slightly increases to 0.291 for correlation of third quarter of 2018 and 2020. Correlation is very strong for first quarter of

2020 with this quarter of 2018 and 2019 respectively (0.965 & 0.957). Correlation is also week for ROA of second quarter of 2019 and 2020 which is 0.422 and 0.395 for third quarter of 2019 and 2020.

Table-7: Calculating t value of ROA of 2018, 2019 and 2020 Paired Samples Test

	Paired Differences					t	df	Sig. (2tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before Covid 19 Return on Asset Q1,18 - After Covid 19 Return on Asset Q1,20	-.0003200	.0005263	.0002354	-.0009735	.0003335	-1.360	4	.246
Pair 2	Before Covid 19 Return on Asset Q1,19 - After Covid 19 Return on Asset Q1,20	-.0000200	.0002864	.0001281	-.0003756	.0003356	-.156	4	.883
Pair 3	Before Covid 19 Return on Asset Q2,18 - After Covid 19 Return on Asset Q2,20	.0010000	.0009539	.0004266	-.0001845	.0021845	2.344	4	.079
Pair 4	Before Covid 19 Return on Asset Q2,19 - After Covid 19 Return on Asset Q2,20	.0011800	.0009230	.0004128	.0000339	.0023261	2.859	4	.046
Pair 5	Before Covid 19 Return on Asset Q3,18 - After Covid 19 Return on Asset Q3,20	.0003800	.0009731	.0004352	-.0008283	.0015883	.873	4	.432
Pair 6	Before Covid 19 Return on Asset Q3,19 - After Covid 19 Return on Asset Q3,20	.0003540	.0007811	.0003493	-.0006158	.0013238	1.013	4	.368

The test result shows a t-statistics of -1.360 with 4 degrees of freedom. The two-tailed pvalue is 0.246, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROA is not different for first quarter of 2018 and 2020.

Pair 2: H_1: ROA is different for first quarter of 2019 and first quarter of 2020.

The test result shows a t-statistics of -0.156 with 4 degrees of freedom. The two-tailed pvalue is .883, which is far more than the conventional 5% level of significance. Therefore, we can strongly accept the null hypothesis at 5% significance level, which means that the average ROA is not different for first quarter of 2019 and 2020.

Pair 3: H_1: ROA is different for second quarter of 2018 and second quarter of 2020.

The test result shows a t-statistics of 2.344 with 4 degrees of freedom. The two-tailed pvalue is .079, which is more than the conventional 5% level of significance. Therefore, we can slightly accept the null hypothesis at 5% significance level, which means that the average ROA is not different for second quarter of 2018 and 2019.

Pair 4: H_1: ROA is different for second quarter of 2019 and second quarter of 2020.

The test result shows a t-statistics of 2.859 with 4 degrees of freedom. The two-tailed pvalue is 046, which is slightly less than the conventional 5% level of significance. Therefore, we can marginally reject the null hypothesis at 5% significance level, which means that the average ROA is different for second quarter of 2019 and 2020.

Pair 5: H_1: ROA is different for third quarter of 2018 and third quarter of 2020.

The test result shows a t-statistics of .873 with 4 degrees of freedom. The two-tailed pvalue is .432, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROA is not different for third quarter of 2018 and 2020.

Pair 6: H_1: ROA is different for third quarter of 2019 and third quarter of 2020.

The test result shows a t-statistics of 1.013 with 4 degrees of freedom. The two-tailed pvalue is .368, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROA is different for third quarter of 2019 and 2020.

Table-8: Comparing Mean of ROE of different years

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Covid 19 Return on Equity Q1,18	.053360	5	.0960586	.0429587
	After Covid 19 Return on Equity Q1,20	.017380	5	.0134258	.0060042
Pair 2	Before Covid 19 Return on Equity Q1,19	.017080	5	.0113096	.0050578
	After Covid 19 Return on Equity Q1,20	.017380	5	.0134258	.0060042
Pair 3	Before Covid 19 Return on Equity Q2,18	.018440	5	.0104715	.0046830
	After Covid 19 Return on Equity Q2,20	.007880	5	.0094275	.0042161
Pair 4	Before Covid 19 Return on Equity Q2,19	.022020	5	.0143448	.0064152
	After Covid 19 Return on Equity Q2,20	.007880	5	.0094275	.0042161
Pair 5	Before Covid 19 Return on Equity Q3,18	.015500	5	.0102257	.0045731
	After Covid 19 Return on Equity Q3,20	.013860	5	.0098142	.0043890
Pair 6	Before Covid 19 Return on Equity Q3,19	.016200	5	.0089797	.0040158
	After Covid 19 Return on Equity Q3,20	.013860	5	.0098142	.0043890

The above table showed the average ROE of the five selected banks from 1st quarter of 2018 to 3rd quarter, 2020. It helps to know how the ROAE of banks have differed before and after Covid 19 situation. Here we see that average ROE was maximum in first quarter of 2018 (0.053360) and minimum in second quarter of 2020 (0.003260). This situation slightly improved in third quarter of 2020 (0.007880).

Table-9: Measuring Correlation of ROE of different quarters of 20218, 2019 and 2020Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before Covid 19 Return on Equity Q1,18 & After Covid 19 Return on Equity Q1,20	5	.749	.145
Pair 2	Before Covid 19 Return on Equity Q1,19 & After Covid 19 Return on Equity Q1,20	5	.987	.002
Pair 3	Before Covid 19 Return on Equity Q2,18 & After Covid 19 Return on Equity Q2,20	5	.692	.195
Pair 4	Before Covid 19 Return on Equity Q2,19 & After Covid 19 Return on Equity Q2,20	5	.631	.254
Pair 5	Before Covid 19 Return on Equity Q3,18 & After Covid 19 Return on Equity Q3,20	5	.539	.349
Pair 6	Before Covid 19 Return on Equity Q3,19 & After Covid 19 Return on Equity Q3,20	5	.411	.492

The correlation between ROE at different quarters of before and after COVID-19 is clear from this table.
The correlation between ROE at different quarters of before and after COVID-19 is clear from this table. Strong Correlation: Between first quarter of 2019 and 2020 where r = 0.987. Moderate Correlation: Between first quarter of 2018 and 2020 where r = 0.749. Between second quarter of 2018 and 2020 where r = 0.692. Between first quarter of 2019 and 2020 where r = 0.631. Week Correlation: Between third quarter of 2019 and 2020 where r = 0.411. From above table we found positive correlation between Return on Equity of 2018, 2019 and 2020.

Table-10: Calculating t value of ROE of 2018, 2019 and 2020Paired Samples Test

		Paired Differences					t	df	Sig. (2tailed)
		Mean	Std. Deviatio n	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair	Before Covid 19 Return on Equity Q1,18 - After Covid 1 19 Return on Equity Q1,20	.0359800	.086464 6	.0386681	-.0713800	.1433400	.930	4	.405
Pair	Before Covid 19 Return on Equity Q1,19 - After Covid 2 19 Return on Equity Q1,20	-.0003000	.002878 4	.0012872	-.0038740	.0032740	-.233	4	.827
Pair	Before Covid 19 Return on Equity Q2,18 - After Covid 3 19 Return on Equity Q2,20	.0105600	.007865 6	.0035176	.0007935	.0203265	3.00 2	4	.040
Pair 4	Before Covid 19 Return on Equity Q2,19 - After Covid 19 Return on Equity Q2,20	.0141400	.011133 2	.0049789	.0003163	.0279637	2.84 0	4	.047
Pair 5	Before Covid 19 Return on Equity Q3,18 - After Covid 19 Return on Equity Q3,20	.0016400	.009629 8	.0043066	-.0103170	.0135970	.381	4	.723
Pair 6	Before Covid 19 Return on Equity Q3,19 - After Covid 19 Return on Equity Q3,20	.0023400	.010227 1	.0045737	-.0103586	.0150386	.512	4	.636

From the above Paired Sample Test result, details interpretation is given below:

Pair 1: H_1: ROE is different for first quarter of 2018 and first quarter of 2020.

The test result shows a t-statistics of 0.930 with 4 degrees of freedom. The two-tailed pvalue is 0.405, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROE is not different for first quarter of 2018 and 2020.

Pair 2: H_1: ROE is different for first quarter of 2019 and first quarter of 2020.

The test result shows a t-statistics of -.233 with 4 degrees of freedom. The two-tailed pvalue is 0.827, which is far more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROE is not different for first quarter of 2019 and 2020.

Pair 3: H_1: ROE is different for second quarter of 2018 and second quarter of 2020.

The test result shows a t-statistics of 3.002 with 4 degrees of freedom. The two-tailed pvalue is 0.040, which is slightly less than the conventional 5% level of significance. Therefore, we can marginally reject the null hypothesis at 5% significance level, which means that the average ROE is different for second quarter of 2018 and 2019.

Pair 4: H_1: ROE is different for second quarter of 2019 and second quarter of 2020.

The test result shows a t-statistics of 2.840 with 4 degrees of freedom. The two-tailed pvalue is 0.047, which is marginally less than the conventional 5% level of significance. Therefore, we can reject the null hypothesis at 5% significance level, which means that the average ROE is different for second quarter of 2019 and 2020.

Pair 5: H_1: ROE is different for third quarter of 2018 and third quarter of 2020.

The test result shows a t-statistics of 0.381 with 4 degrees of freedom. The two-tailed pvalue is 0.723, which is more than the conventional 5% level of significance. Therefore, we can strongly accept the null hypothesis at 5% significance level, which means that the average ROE is not different for third quarter of 2018 and 2020.

Pair 6: H_1: ROE is different for third quarter of 2019 and third quarter of 2020.

The test result shows a t-statistics of 0.512 with 4 degrees of freedom. The two-tailed pvalue is 0.636, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROE is not different for third quarter of 2019 and 2020.

SPECIFIC OBJECTIVE-2
Table-11: Comparing Mean of NIM of different quarters of 2020
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	After Covid 19 Net Interest Margin Q1,20	.005640	5	.0038824	.0017363
	After Covid 19 Net Interest Margin Q2,20	.003260	5	.0026782	.0011977
Pair 2	After Covid 19 Net Interest Margin Q1,20	.005640	5	.0038824	.0017363
	After Covid 19 Net Interest Margin Q3,20	.003440	5	.0035083	.0015689
Pair 3	After Covid 19 Net Interest Margin Q2,20	.003260	5	.0026782	.0011977
	After Covid 19 Net Interest Margin Q3,20	.003440	5	.0035083	.0015689

The above table showed the average NIM of the five selected banks from 1st quarter of 2020 to 3rd quarter, 2020. It helps to know how the NIM of banks has differed this year because of COVID-19 pandemic. Here we see that average NIM was best in first quarter of 2020 (0.005640) and at worse condition in second quarter of 2020 (0.003260) and slightly improved in third quarter of 2020 (0.003440). This situation slightly improved in third quarter of 2020 (0.007880).

Table-12: Measuring Correlation of NIM of different quarters of 2020 Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	After Covid 19 Net Interest Margin Q1,20 & After Covid 19 Net Interest Margin Q2,20	5	.345 .960	.570 .010
Pair 2	After Covid 19 Net Interest Margin Q1,20 & After Covid 19 Net Interest Margin Q3,20	5		

d 19 Net Interest Margin Q2,20 & After				
Pair 3	5	.518	.372	
Covid 19 Net Interest Margin Q3,20				

The correlation between ROE at different quarters of 2020 is clear from this table. Strong Correlation: Between first and second quarter of 2020 where r = 0.960. Week Correlation: Between first and second quarter of 2020 where r = 0.570. Between second and third quarter of 2020 where r =0.372From above table we found positive correlation between Net Interest Margin of different quarters of 2020.

Table-13: Calculating t value of ROE of different quarters of 2020 Paired Samples Test

		Paired Differences					t	df	Sig. (2tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	After Covid 19 Net Interest Margin Q1,20 - After Covid 19 Net Interest Margin Q2,20	.0023800	.0038829	.0017365	-.0024413	.0072013	1.371	4	.242
Pair 2	After Covid 19 Net Interest Margin Q1,20 - After Covid 19 Net Interest Margin Q3,20	.0022000	.0011136	.0004980	.0008173	.0035827	4.418	4	.012
Pair 3	After Covid 19 Net Interest Margin Q2,20 - After Covid 19 Net Interest Margin Q3,20	-.0001800	.0031228	.0013966	-.0040575	.0036975	-.129	4	.904

From the above Paired Sample Test result, details interpretation is given below:
Pair 1: H_1: NIM is different for first and second quarter of 2020.
The test result shows a t-statistics of 1.371 with 4 degrees of freedom. The two-tailed pvalue is 0.242, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average NIM is not different for first and second quarter of 2020.
Pair 2: H_1: NIM is different for first quarter of 2020 and third quarter of 2020.
The test result shows a t-statistics of 4.418 with 4 degrees of freedom. The two-tailed pvalue is 0.012, which is less than the conventional 5% level of significance. Therefore, we cannot accept the null hypothesis at 5% significance level, which means that the average NIM is different for first and third quarter of 2020.
Pair 3: H_1: NIM is different for second quarter and third quarter of 2020.
The test result shows a t-statistics of -.129 with 4 degrees of freedom. The two-tailed pvalue is 0.904, which is more than the conventional 5% level of significance. Therefore, we cannot reject the null hypothesis at 5% significance level, which means that the average NIM is not different for second and third quarter of 2020.

Table-14: Comparing Mean of ROA of different quarters of 2020 Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
After Covid 19 Return on Asset Q1,20 Pair 1 After Covid 19 Return on Asset Q2,20	.001340	5	.0009154	.0004094
After Covid 19 Return on Asset Q1,20 Pair 2	.000540	5	.0005505	.0002462
	.001340	5	.0009154	.0004094
After Covid 19 Return on Asset Q3,20	.000960	5	.0005727	.0002561
	.000540	5	.0005505	.0002462
After Covid 19 Return on Asset Q2,20		5		
Pair 3 After Covid 19 Return on Asset Q3,20				
	.000960	5	.0005727	.0002561

The above table showed the average ROA of the five selected banks from 1st quarter of 2020 to 3rd quarter, 2020. It helps to know how the ROA of banks have differed this year because of Covid 19 pandemic. Here we see that average NIM was best in first quarter of 2020 (0. .001340) and at worst condition in second quarter of 2020 (0.000540) and slightly improved in third quarter of 2020 (0.003440). This situation slightly improved in third quarter of 2020 (0.000960.

Table-15: Measuring Correlation of ROA of different quarters of 2020

		N	Correlation	Sig.
Pair 1	After Covid 19 Return on Asset Q1,20 & After Covid 19 Return on Asset Q2,20	5	.646	.239
Pair 2	After Covid 19 Return on Asset Q1,20 & After Covid 19 Return on Asset Q3,20	5	.853	.066
Pair 3	After Covid 19 Return on Asset Q2,20 & After Covid 19 Return on Asset Q3,20	5	.641	.244

Paired Samples Correlations

The correlation between ROE at different quarters of 2020 is clear from this table. Strong Correlation: Between first and third quarter of 2020 where r = 0.853. Moderate Correlation: Between first and second quarter of 2020 where r = 0.646. Between second and third quarter of 2020 where r=0.641. From above table we found positive correlation between Return on Asset of different quarters of 2020.

Table-16: Calculating t value of ROA of different quarters of 2020 Paired Samples Test

| | Paired Differences | | | | | t | df | Sig. (2tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
				Lower	Upper			
Pair 1 — After Covid 19 Return on Asset Q1,20 - After Covid 19 Return on Asset Q2,20	.0008000	.0007000	.0003130	-.0000692	.0016692	2.556	4	.063
			.0002332	-.0002676	.0010276			.179
Pair 2 — After Covid 19 Return on Asset Q1,20 - After Covid 19 Return on Asset Q3,20	.0003800	.0005215				1.629	4	
			.0002131	-.0010116	.0001716			.120
Pair 3 — After Covid 19 Return on Asset Q2,20 - After Covid 19 Return on Asset Q3,20	-.0004200	.0004764				-1.971	4	

From the above Paired Sample Test result, details interpretation is given below:

Pair 1: H_1: ROA is different for first and second quarter of 2020.

The test result shows a t-statistics of 2.556 with 4 degrees of freedom. The two-tailed pvalue is 0.063, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROA is not different for first and second quarter of 2020.

Pair 2: H_1: ROA is different for first quarter of 2020 and third quarter of 2020.

The test result shows a t-statistics of 1.629 with 4 degrees of freedom. The two-tailed pvalue is .179 which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROA is not different for first and third quarter of 2020.

Pair 3: H_1: ROA is different for second quarter and third quarter of 2020.

The test result shows a t-statistics of -1.971with 4 degrees of freedom. The two-tailed pvalue is .120, which is more than the conventional 5% level of significance. Therefore, we cannot reject the null hypothesis at 5% significance level, which means that the average ROA is not different for second and third quarter of 2020.

Table-17: Comparing Mean of ROE of different quarters of 2020
Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 — After Covid 19 Return on Equity Q1,20	.017380	5	.0134258	.0060042
After Covid 19 Return on Equity Q2,20	.007880	5	.0094275	.0042161
After Covid 19 Return on Equity Q1,20 Pair 2	.017380	5	.0134258	.0060042
After Covid 19 Return on Equity Q3,20	.013860	5	.0098142	.0043890
After Covid 19 Return on Equity Q2,20 Pair 3	.007880	5	.0094275	.0042161
After Covid 19 Return on Equity Q3,20		5		.0043890

| | | .013860 | 5 | .0098142 | |

The above table showed the average ROE of the five selected banks from 1ˢᵗ quarter of 2020 to 3ʳᵈ quarter, 2020. It helps to know how the ROE of banks have differed this year because of Covid 19 pandemic. Here we see that average ROE was best in first quarter of 2020 (0. .0134258) and at worse condition in second quarter of 2020 (0. .0094275) and slightly improved in third quarter of 2020 (0.003440). This situation slightly improved in third quarter of 2020 (0.009814207880).

Table-18: Measuring Correlation of ROE of different quarters of 2020 Paired Samples Correlations

	N	Correlation	Sig.
Pair After Covid 19 Return on Equity Q1,20 & After Covid 19 Return on 1 Equity Q2,20	5	.775 .891 .782	.124 .043 .118
Pair After Covid 19 Return on Equity Q1,20 & After Covid 19 Return on 2 Equity Q3,20	5		
Pair After Covid 19 Return on Equity Q2,20 & After Covid 19 Return on 3 Equity Q3,20	5		

The correlation between ROE at different quarters of 2020 is clear from this table. Strong Correlation: Between first and third quarter of 2020 where r= 0.891. Moderate Correlation: Between first and second quarter of 2020 where r= 0.775. Between second and third quarter of 2020 where r=0.782. From above table we found positive correlation between Return on Equity of different quarters of 2020.

Table-19: Calculating t value of ROE of different quarters of 2020
Paired Samples Test

	Paired Differences					t	df	Sig. (2tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 After Covid 19 Return on Equity Q1,20 - After Covid 19 Return on Equity Q2,20	.0095000	.0085446	.0038213 .0028940	-.0011095 -.0045151	.0201095 .0115551	2.486	4	.068 .291
Pair 2 After Covid 19 Return on Equity Q1,20 - After Covid 19 Return on Equity Q3,20	.0035200	.0064712	.0028456	-.0138806	.0019206	1.216	4	.103
Pair 3 After Covid 19 Return on Equity Q2,20 - After Covid 19 Return on Equity Q3,20	-.0059800	.0063629				-2.101	4	

From the above Paired Sample Test result, details interpretation is given below:

Pair 1: H_1: ROE is different for first and second quarter of 2020.

The test result shows a t-statistics of 2.486 with 4 degrees of freedom. The two-tailed p-value is 0.068, which is slightly more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROE is not different for first and second quarter of 2020.

Pair 2: H_1: ROE is different for first quarter of 2020 and third quarter of 2020.

The test result shows a t-statistics of 1.216 with 4 degrees of freedom. The two-tailed pvalue is 0.291, which is more than the conventional 5% level of significance. Therefore, we can accept the null hypothesis at 5% significance level, which means that the average ROE is not different for first and third quarter of 2020.

Pair 3: H_1: ROE is different for second quarter and third quarter of 2020.

The test result shows a t-statistics of -2.101 with 4 degrees of freedom. The two-tailed p-value is 0.103, which is more than the conventional 5% level of significance. Therefore, we cannot reject the null hypothesis at 5% significance level, which means that the average ROE is not different for second and third quarter of 2020.

IX.   CONCLUSION

The COVID-19 is undoubtedly the biggest threat of our lives as well as economy. No single sector is free from its losses. Banking sector, as the most important driving power demands a close monitoring to realize the present and future upcoming sufferings it may face because of this pandemic. With this aim this paper has been prepared. The main target was to focus on whether banks profitability has been affected or not during this crucial situation. Because of time lacking, we focused only on private commercial banks and five banks were purposively selected as representatives of other ones.

Banks profitability is measured by various ratios among which ROA, ROE and NIM are very much important. So importance is given on these factors. Comparison was made among the first three quarters of 2018, 2019 and 2020 and also among these quarters of 2020. In almost every case, no significant difference was found before and after of COVID-19. This can be happened because of various reasons. *First*, Bangladesh Bank has taken various steps to protect banks from COVID storm. *Second*, Loan is the source of interest bearing income for a bank. During corona period the amount of Non-performing Loans (NPLs) have increased significantly but the central bank suspended the routine exercise of classification in September last to help business overcome the adverse impact of COVID-19 pandemic (The Financial Express, 23 December 2020). *Third*, because of corruption, loan default and other malpractices, a weak position was held by most of our banks even before this year. *Fourth*, after removing lockdown, business again started so banks income raised at some extent. *Fifth*, writing off loans along with restructuring may be another reason to push down the volume of NPLs during this period. That's why picture was almost same before and after corona situation. This result is good but still it cannot be said that our banking sector is out of danger.

The real picture would surface after ending the suspension of loan classification. It is estimated that the real situation will be found partially in the first quarter of 2021 and fully in June 2021 and also hoped that NPLs may fall further in the final quarter of this year as banks will expedite their recovery drivers. So from these discussions, it can be understood that because of some strategies adopted by Bangladesh Bank, present picture of profitability of banks is not depressing till now. It is expected that the private banks of Bangladesh will be able to overcome this pandemic situation very soon by making proper action plan and taking right decision at right time.

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