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The Impact of COVID-19 Pandemic on Islamic and Conventional Banks' Profitability

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Abstract: The banking sector has a significant impact on a nation's financial stability and economic development. As one of the fundamental components of the financial sector, banks offer services that are essential for the expansion of the markets. The stability of the financial system is significantly impacted by the efficiency of the banking sector. COVID-19 has had a tremendous effect on the economy. This pandemic cannot be disregarded, considering how widespread it has been and how many people it has affected globally. Both society and the global economy have undergone profound change. Hence, it is critical to ascertain how severely the outbreak has impacted the banking system. To assess the potential impact of pandemic, the current study examined conventional and Islamic banking. This study also investigates how COVID-19's moderating effect influences the banking system. Financial statements from 10 conventional banks and 5 Islamic banks in Pakistan are the sources of this study's sample data. COVID-19 is a moderator in this study. The empirical estimations by means of the fixed-effects approach suggests that the moderator has a large impact on bank profitability. In addition, COVID-19 appears to have a stronger influence on the Islamic banking system.

Keywords: COVID-19; Islamic vs. conventional; bank profitability; fixed-effects estimation



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1. Introduction

The banking sector plays an important role in the economic growth and financial stability of countries. Banks are one of the pillars of the financial ecosystem, which provide services that are vital to the foundation of the financial markets. The profitability of the banking sector plays an overly aggressive role in determining the soundness of the banking system. In that respect, the profitability hence becomes a key success factor for booming economies, which is the reason why profitability of the banking sector is so important (Anbar and Alper 2011).

There are two types of banking sectors: one is Riba-free, called Islamic, and the other one is interest-based, known as conventional banking. Both of these banking systems create competition to satisfy their customers' needs and expectations. Islamic and conventional banking each play a major role for the economy, and these are differentiated based on Riba, risk sharing, profit sharing practices and on their goals. The first Islamic bank was introduced in Malaysia in 1983 (Ramlan and Adnan 2016). Islamic finance basically provides financial services and products according to the tenets of Shariah. Islamic financing is increasing day by day, especially in Muslim countries (Hussain et al. 2016).

The basic reason for Islamic financing is to satisfy the teachings of the Holy Quran and Sunnah of the cherished Prophet Muhammad (P.B.U.H.), and charging additional money

and accumulating extra profit is strictly prohibited in Islam. According to Shariah and Islamic Common Law, contracts in the context of Riba and Speculation (Gharar) are not allowed. In Islam, carrying balances on credit cards are strictly prohibited, and putting money in fixed-income securities is also not allowed. This includes T-bonds and T-bills or any other product containing a fixed return. Islam does not allow fixed returns. Profit-Loss-Sharing is the concept of Islam. Investors following the Islamic financial system profit when there is a profit, and bear loss when there is a misfortune. Basically, the Islamic financial system is much like the Western Financial system, but it is exactly according to the teaching of Holy Quran and Sunnah, and is still developing and being refined more day by day. Speculators usually are given fair and fixed rates of return, which is strictly prohibited in Islam. The concepts of interest, extra profit and fixed returns differentiate Islamic financing from the conventional financing system. During the last twenty years, there was a very large-scale development of Islamic financing in financial markets and Islamic banking around the world in almost all Muslim countries. Over the past few years Islamic banking has been growing rapidly (Hussain et al. 2016).

The COVID-19 pandemic has badly hit the economy of the world. The banking sector also faced challenges due to this pandemic. This virus has not only affected the banking sector, but also the stock markets. The expected default rate is rising due to the uncertainty of health and lockdowns. The banking sector then faces a liquidity problem because of the mismatch of demand and supply (Obeidat et al. 2021). In this pandemic, customers and governments withdraw from banks to support the economy, while borrowers are not returning funds to banks which causes a major reduction in deposits. To deal with this liquidity problem, the central banks announced support to the banking sector by lowering reserve requirements, regulatory capital and buying bonds/sukuks. COVID-19 has had a great impact on conventional and non-conventional banks' profitability. Since COVID-19 the credit environment of banking has deteriorated, and it is expected that some considerable time will be required to recover credit ratings back to pre-COVID-19 levels (Obeidat et al. 2021). Market stock investors assessed that Islamic banks were not superior to conventional banks during the COVID-19 pandemic. There was a negative impact on stock returns of both banks due to COVID-19 and social distancing policies. Banks with higher operating cost suffered more. Islamic banks are not always immune to shock, as they have higher operating costs than conventional banks. So, there was an adverse impact on Islamic banks compared to conventional ones (Ashraf et al. 2022). It has been found that Islamic Banks (Ibs) enjoy distinctive methods of carrying out bank intermediation functions. Islamic banks have been demonstrated to have resilience in enduring the negative effects of economic crises, and in comparison to conventional banks, are claimed to be better equipped to safeguard their profitability during times of crisis. As a result, they can produce shareholder value in the form of higher stock returns. According to the empirical findings, which were based on the data of 426 banks from 48 nations, during the COVID-19 epidemic, Ibs' stock returns were roughly 10–13 percent greater than those of their conventional equivalents. This is after adjusting for a wide range of pre-crisis bank-level and country-level characteristics, such as the state of each bank's health and risk-taking culture (Mirzaei et al. 2022).

According to the author's knowledge there is little literature that investigates the comparison of Islamic and non-Islamic profitability with the moderating role of COVID-19 in Pakistan. This study will evaluate the success of Islamic banking as compared to conventional, as Islamic banking is now quite an old concept, and with the passage of time it is growing continuously. Islamic banking is not only growing in Muslim countries but also in non-Muslim countries. Conventional banks have also started using the Islamic window concept, by which they are attracting more banking customers. The novelty of this research will be useful and beneficial for the investors, policymakers, customers, managers, bankers, financial institutions and financial analysts' decision making. It will help top management and the public in making decisions. The results of this research will be helpful to understand the moderating role of COVID-19 on Islamic and conventional banking.

This research is organized around Pakistan's emerging market, which has a bank-based economy. It is formed of Pakistan's financial institutions, which constitute an important part of the country's economy (Sultan and Siddique 2010).

The structure of this paper is as follows. Section 2 discusses prior literature and formulate the research hypotheses. Section 3 describes the sample and data, as well as the empirical framework. Section 4 shows the empirical results. Section 5 performs the robustness checks. Section 6 is focused on quantitative outcomes' discussion. Last section concludes the paper.

2. Literature Review

During the COVID-19 pandemic, Islamic banks are more flexible as compared to conventional banks because of profit sharing system. This system dominates transactions under these challenging conditions. Table 1 summarizes the differences between Islamic and conventional banking systems.

Table 1. Differences between Islamic and conventional banking systems.

Islamic System	Conventional System
Banking practices and all elements involved are and must be Shariah compliant and free from prohibited activities such as Riba (interest), Gharar (uncertainty) and Maysir (gambling)	Conventional bank practices do not have to be Shariah compliance and they include the elements such as Riba (interest), Maysir (gambling) and other prohibited activities in their transactions (Jaffar and Manarvi 2011)
Real assets (having their own intrinsic value) are involved and used as products	Money is used as a product and is the base of earning
There is no concept of the time value of money and profit is earned through trading of goods and services. It is asset-backed financing where there always an asset involved and no concept of money (Awan 2009)	This works on the principle of the time value of money and interest is earned on money/capital
Loss is shared among banks and the organization/individual when they incur any loss	Loss is not shared and the organization/individual has to pay the interest even if it incurs any loss (Arslan et al. 2020)
A balanced budget is maintained as no more money is created (issuing bonds or printing new notes for deficit)	Transactions are not backed by real assets, thus resulting in deficit financing in money markets
Inflation is controlled because no money expansion takes place due to the involvement of goods and services	Inflation is created while disbursing funds as the transactions are not backed by real assets, i.e., goods and services, thus resulting in the expansion of money
Different Islamic products are Mudaraba, ijara, takaful, Hawala, Musawma, sukuk and Mushakarak. In delaying payment or in default, customers have to contribute in charity funds (Sultan and Siddique 2010)	Different conventional banking products are credit cards, interest-based loans, bonds, insurance, car loans and short- and long-term loans. In delaying payment of loans interest will be charged (Jaffar and Manarvi 2011)
As the inflation is much controlled and in check in the Islamic financial system, no extra burden or amount is charged by the entrepreneurs	Due to inflation, entrepreneurs incorporate the inflationary effect into the cost of their goods and services and in result increase the prices of their goods and services available in the economy

However, this pandemic has still hit the profitability of Islamic banking, but the role of Islamic fintech will improve in the post-COVID-19 era (Rabbani et al. 2020). Bashir (2003) examined the profitability of Islamic banks in the Middle East in 1993 and 1998, and stated that the profitability is positively related to equity and macroeconomic variables such as GDP; inflation also impacts profitability. Islamic financing is increasing day by day, especially in Muslim countries (Hussain et al. 2016). According to Shariah and Islamic Common Law, contracts in the context of Riba and Speculation (Gharar) are not allowed. During the last twenty years, there has been a very large-scale development of Islamic financing in financial markets and Islamic banking around the world in almost all Muslim countries (Hussain et al. 2016). According to Fakhri and Darmawan (2021), Islamic banking

in Indonesia is more vulnerable compared to conventional banking, but COVID-19 also influences the operating expenses affecting the revenue of conventional banking. In Pakistan, growth of Islamic banking has been slow, but in recent years it started increasing as almost all other conventional banks opened an Islamic banking window because of the increasing trend of Islamic banks internationally. Some of the problems that Islamic banking is facing include the liquidity problem, lack of knowledge and well-trained human resources, fewer products compared to conventional banking, and a slow growth rate; still, the popularity of Islamic banking is increasing day by day.

According to [Ashraf \(2022\)](#), who conducted a study to compare Shariah- vs. non-Shariah-compliant equities during COVID-19, Shariah-compliant stocks performed better than non-Shariah-compliant ones. Furthermore, it was observed that during the COVID-19 pandemic, confirmed cases and government responses were milder for Shariah-compliant companies. Muslim investors were more inclined towards religious beliefs in the COVID-19 crisis. [Ali et al. \(2022\)](#) analyzed the impact of the COVID-19 pandemic on Islamic and non-Islamic stock indexes in Pakistan. The study showed that during the pandemic, stock indexes of both Islamic and conventional natures behaved in almost same way. This global emergency made investors risk-averse and trading activity worsen. Although the concepts of both stocks are different, investors were concerned for profit maximization and preferred to invest funds on their objective rather than on conceptual differences. [Sundarasan et al. \(2022\)](#) examined the market volatility of Shariah and non-Shariah indexes in the ASEAN and GCC regions. The market volatility of ASEAN countries was higher than GCC countries during the COVID-19 pandemic because markets in ASEAN countries were more affected than Middle Eastern countries. The Shariah indexes are more volatile than non-Shariah ones in ASEAN countries because of a lack of portfolio diversification due to Shariah's strict procedures.

[Dao and Nguyen \(2020\)](#) investigated the factors influencing commercial bank profitability in Asian developing countries such as Vietnam, Malaysia, and Thailand, from 2012 to 2016, and found that all entities had a negative association between operational risk and banking profitability. [Rwechungura et al. \(2020\)](#) examined the connection between bank profitability and stability in Tanzania from 2006 to 2015 and concluded that large banks were more profitable than small banks. [Katusiime \(2021\)](#) explored the effects of the COVID-19 pandemic on banking sector profitability in Uganda and showed that the outbreak has a significant adverse impact on banking profitability only in the long run.

Similar to the financial crisis of 2007–2009, the COVID-19 crisis initially affected all banks. It negatively affected the rating and funding conditions of banks, especially with low profitability ([Aldasoro et al. 2020](#)). The COVID-19 pandemic has had more adverse effects on the banking sector as compared to corporate due to national lockdowns and social distancing measures. Banks with lower liquidity and profitability were much more affected. In this crisis, central banks facilitated banks by providing policies regarding greater liquidity and the flow of credit ([Demirgüç-Kunt et al. 2021](#)). This pandemic affected almost all countries because of rapid transmission of the virus, which has great impacts on the economic system. However, this pandemic also created several different opportunities such as online banking, online meeting, food delivery services and all other online stores, which gained more in this period. Banks are a major and important pillar of the economy, and they facilitate in trade, credit facilities and support other businesses by providing loans. However, this pandemic affected the banking industry as well and put this sector under stress around the world ([Darjana et al. 2022](#)).

Islamic banking faced many challenges during this pandemic. A minimum number of customers were allowed during MCO. The Central bank of Malaysia reduced the BLR, which affects a country's inflation and leads to lower interest rates, which then causes problems for banks because a low return rate will decrease deposits ([Anwar et al. 2020](#)). [Fajri et al. \(2022\)](#) showed that during COVID-19, the profitability of Islamic banking was negatively related with this pandemic in the long run. The result showed that the decrease in interest rates and nonperforming finance was associated with the increase in return

on assets. The banking sector in Kuwait has taken steps to protect different sectors from pandemic effects by lowering interest rates because oil prices were decreasing due to the impact of COVID-19 (Almutairi 2022). Kuwaiti banks provided services such as clearing, settlement and payments through the internet and electronic media to facilitate customers during this period. According to Almutairi (2022), the debt and leverage ratio increased after COVID-19 but return on asset, equity and investment decreased after COVID-19.

During the first quarter of COVID-19, the U.S bank experienced a huge deposit flow from USD 13 trillion to USD 15 trillion in April 2020 (Levine et al. 2021). There was rapid growth in deposits and saving rates in U.S banks during this pandemic. As the economy was disturbed, households boosted their savings keeping in view the pandemic and economic uncertainty, thus they started saving their income. There was positive relation between COVID-19 and bank deposits in the U.S. There was great uncertainty in financial markets which prompted investors to save their money in bank deposits. This pandemic created panic and anxiety among people, due to which they started worrying about future, which surged their savings (Levine et al. 2021). Deposits are considered as safe and low risk investments. Agnese and Vento (2020) stated that in terms of deposits, the top four European countries, Germany, France, Italy and Spain, were stable and reliable during this pandemic. There was no massive change in deposits from households and non-financial corporations. Just like different sectors, investors also faced difficulty in making investment decisions. Cryptocurrencies also faced much instability during COVID-19 as there was an increase in the systematic risk. However, the results show that as Bitcoin is a mature cryptocurrency, it was relatively less vulnerable and more stable than other ones (Akhtaruzzaman et al. 2022).

According to the empirical findings, which were based on the data of 426 banks from 48 nations, during the COVID-19 pandemic, Ibs' stock returns were roughly 10–13 percent greater than those of their conventional equivalents (Mirzaei et al. 2022). According to Fidyia (2020), although Indonesia has a large population of Muslims of almost 87% of their total population, they have only 10.5% of their total accounts in Islamic banks. Some of the factors for this are product information dissemination, product knowledge and profit margin factor. These different factors have a great impact on customers in choosing products offered by Islamic or conventional banks which directly affect banking profitability. Saleem and Ashfaq (2020) compared the profitability of Islamic banks between Malaysia and Pakistan, which showed that some factors such as size of bank, asset quality, liquidity and efficiency have an impact on the profitability of both countries in the same manner. However, in Pakistan leverage and asset quality are not good predictors of profitability because it is in the developing phase of Islamic banking. Bank size has a positive impact on the profitability of banks in both countries, but management of Pakistani Islamic banks should focus on the asset quality. Banks should be aware and provide relevant knowledge to their customers whether individual or corporate to use their Islamic products. Zarrouk et al. (2016) states that Islamic banks earn higher profits through non-financial activities. Islamic banking performs better with higher GDP and investment but performance is negatively related to the inflation rate.

Jaara et al. (2021) stated that Islamic banks are less efficient than conventional banking in profitability level. Researchers revealed that bank size, capital ratio, GDP growth and inflation influence 85% of conventional bank profitability and 89% on Islamic bank profitability. When inflation rate increases, buying power decreases, which will directly affect bank loans to investors and will reflect on the profitability of Islamic banks. Network theory was used to examine the market power and competitive environment of banks during the global financial crisis. The result indicated that during and after the global financial crisis there was a lower level of competition. Therefore, banks disbursed loans to customers without proper screening, which led to accumulation of NPAs. Regulators should regulate the high credit sold off to their customers, especially during crisis (Rahman and Misra 2021).

In the 1970s, [Kahneman and Tversky \(2013\)](#) explained the emotional and psychological aspects of customers in decision making. Prospect theory states that humans weigh loss more than gain as loss causes a more significant impact than gain and customers make decisions to pursue perceived gain more than loss. This theory is based on the process of decision making between different choices. It also explains the concept of loss aversion that investors weigh loss more than the gain; this means any individual will feel the pain of losing USD 200 as twice as the pleasure of gaining USD 200. Loss has a more emotional significant impact than gain. As part of development of behavior finance, the Islamic behavior finance gained light at the end of the 1980s to study the behavior (psychological and religion) of investors and customers towards their decision making in dealing with Islamic finance, Islamic banking and products ([Kahneman and Tversky 2013](#)). The theory of bank size was developed by ([Krasa and Villamil 1992](#)), which explains the importance of bank size to determine profitability in presence of risk. Stefan and Anne further stated that cost and risk are both important determinants of bank size. The theory also states that even bank portfolios are subjected to non-diversifiable macro risk, which improves default probability and increases monitoring cost. A higher monitoring cost leads to a decline in the profitability of banks. Conventional and Islamic banking have different bank sizes, which differently impact the profitability of banks ([Rashid and Ilyas 2018](#)).

According to the review of literature, various variables exhibit distinct effects. Conventional banking has more experience than Islamic banking, so it is more stable when compared with Islamic banking. The profitability of conventional banks is higher than Islamic, but Islamic banking is less risky than conventional ([Matar 2017](#)). Average profitability of Islamic banking in 2008 and 2009 was better in all countries as compared to 2007 except Qatar, UAE and Bahrain. In Saudi Arabia, Turkey, Bahrain offshore and Jordan, the Islamic banking profitability was significant. The banking sector in these countries represent 52% and Islamic banking in these countries represent 37% of assets in the sample. Islamic banking in UAE and Qatar is worse than conventional, and an aggregate test for the sample showed that the impact of crisis on profitability of both groups (Islamic and conventional) was insignificant ([Hasan and Dridi 2010](#)).

Islamic products are more complicated than conventional because of restrictions, and how they involve more than one concept. According to [Hasan and Dridi \(2010\)](#), Islamic banks are subject to different effects during crisis. Initially, profitability of Islamic banks was limited, but after some time Islamic banks in some countries faced big losses as compared to conventional. In 2005–2007, Islamic banks had higher returns on assets but after this crisis their profitability largely declined.

During crisis, asset growth and credit were higher than in conventional banking because of its growing market share and lending to a less-affected consumer sector helped to support asset and credit growth. In the 2008–2009 crisis, larger Islamic banks performed better compared to small ones because of better diversification and strong reputations. This can be improved by developing the industry and increasing competition through establishing well-managed and large Islamic banks that can perform and compete better than existing ones. This global crisis gave an opportunity to Islamic banking to prove themselves and also highlighted the need to address and overcome different important challenges ([Hasan and Dridi 2010](#)).

Based on the discussion of prior literature, the below-mentioned hypotheses are devised. In addition, the statistical significance of the estimated coefficients will be examined using a *t*-test. Only when the test statistic falls in the critical region (i.e., has a value greater than the critical value), the null hypothesis is rejected. As well, the *p*-value is used to determine if the null hypothesis is disregarded or confirmed (not rejected). If the *p*-value is less than the specified significance level (i.e., 1%, 5%, 10%), the null hypothesis is rejected; alternatively, it is not.

H1. *Bank size has a positive impact on profitability with the exogenous shock of COVID-19.*

H2. *Operating efficiency with the moderation of COVID-19 has a negative impact on banks' return on assets.*

H3. *Interaction of COVID-19 with bank deposits have a positive impact on profitability of banks.*

3. Research Methodology

In order to analyze and comparing Islamic and conventional banks in Pakistan, we approach a quantitative study in which secondary data are used for analysis.

3.1. Sample Selection

The sample consisted of 10 conventional banks and 5 Islamic banks in Pakistan. The sample consisted of Pakistani banks because after this pandemic no proper research was performed on the moderating role of COVID-19. As the pandemic is a part of this world, it is very important to consider this factor, which might help banks to tackle the condition in the future. All these banks are Pakistan-controlled banks and data were obtained from published financial balance sheets and income statements in annual reports of these banks. In this analysis, the sample conventional banks are Habib bank, United bank, Allied bank, National bank of Pakistan, Bank of Punjab, Soneri bank, MCB, Bank Alfalah, Askari bank, Bank Al Habib and the Islamic sample banks are Meezan bank, BankIslami, Bank AlBaraka, Dubai Islamic bank and MIB. A total of 15 banks were taken as the sample because their financial statements provide clear, complete and accurate information. Five Islamic banks were included as they are fully pure Islamic banks. Other banks were not included because they had incomplete financial information, or they were not purely Islamic as they have Islamic windows only.

3.2. Data Description

Data were collected on a quarterly basis from the financial statements of banks from 2016 to 2021. They were divided into two parts: before and during COVID-19. COVID-19 is used as a moderator. From 2016 to 2018 the value of COVID-19 is considered 0 and during COVID-19 it is assigned 1. Return on assets will be used as proxy to measure the profitability of banks in comparison with independent variables of bank deposits, operating efficiency and liquidity; however, bank size will also be a control variable. A dummy variable is used to examine the effect of the recent COVID-19 outbreak on the Pakistan banking profitability. Descriptive statistics and charts were used to analyze the comparison of Islamic and conventional banking. Stata software was used, and regression analysis was applied on this study's results.

Detailed explanations of the variables are mentioned in below Table 2.

Regression analysis is used in this study for testing the relationship between variables. Its purpose is to estimate the effect of different independent variables on a dependent variable. A multiple regression model is used for the comparison of profitability of Islamic and conventional banking in Pakistan with the moderating role of COVID-19. In this model, return on assets is the dependent variable, which is used as a proxy for the measurement of profitability of banks. Bank deposit, size and operating efficiency are independent variables and COVID-19 is a moderating variable.

For assessing the relation as indicated in H1, Equation (1) is designed:

$$\text{Return on assets} = \alpha + \beta_1 \text{Bank size}_{it} + \beta_2 \text{Covid19}_{it} + \beta_3 (\text{Bank size} * \text{Covid19})_{it} + \beta_4 \text{Deposits}_{it} + \beta_5 \text{Operating efficiency}_{it} + e \quad (1)$$

In order to examine the association as specified in H2, Equation (2) is formed:

$$\text{Return on assets} = \alpha + \beta_1 \text{Operating efficiency}_{it} + \beta_2 \text{Covid19}_{it} + \beta_3 (\text{Operating efficiency} * \text{Covid19})_{it} + \beta_4 \text{Deposits}_{it} + \beta_5 \text{Bank size}_{it} + e \quad (2)$$

With the purpose of investigating the link as formulated in H3, Equation (3) is devised:

$$\text{Return on assets} = \alpha + \beta_1 \text{Deposits}_{it} + \beta_2 \text{Covid19}_{it} + \beta_3 (\text{Deposits} * \text{Covid19})_{it} + \beta_4 \text{Banksize}_{it} + \beta_5 \text{Operating efficiency}_{it} + e \quad (3)$$

Table 2. Variable definitions and measurement.

Variables	Definitions	Measurement	Abbreviation	Prior Studies
Dependent variables				
Profitability (Return on assets)	Return on Asset is used to assess the profitability of a firm and to analyze its future outlook in terms of revenues and growth	Regression analysis is used to measure the relationship of ROA, a dependent variable with other independent variables $ROA = \frac{NET\ INCOME}{TOTAL\ ASSETS}$	ROA	Jaara et al. (2021)
Independent variables				
Bank deposit	Bank deposits are the main funding of the banks, they are deposited by customers. It is a liability of banks but plays a major role in profitability of banks. Banks that have fewer investment avenues will try to improve their deposit base in order to earn revenues	$BANK\ DEPOSITS = \frac{TOTAL\ DEPOSITS}{TOTAL\ ASSETS}$	Dp	Al-Homaidi et al. (2020)
Bank size	Bank size defines the market share of each bank in the market or certain economy. A bank with large size reduces its cost because of economies of scale	$BANK\ SIZE = LOG\ OF\ TOTAL\ ASSETS$	Log A	Ramlan and Adnan (2016)
Operating efficiency	Operating efficiency is the ratio of bank's operating expenses to total assets. It indicates the bank management's efficiency in spending every unit for generating revenues	$OPERATING\ EFFICIECNY = \frac{TOTAL\ OPERATING\ EXPENSE}{TOTAL\ ASSETS}$	OPEF	Al-Homaidi et al. (2020)
COVID-19 (moderating variable)	This is the moderating variable that takes 1 value during COVID-19 from 2019 to 2021, otherwise it has a 0 value before COVID-19 from 2016 to 2018	1 = during COVID-19 0 = before COVID-19	Cov	Jin et al. (2021)

The α represents the constant term. $\beta_1, \beta_2, \beta_3, \beta_4$ represents the parameter of change and e relates to the error term that satisfies the equation. ROA is used to calculate the bank's profitability. Operating efficiency is the dependent discrete variable. Bank deposit and size are also dependent variables. Bank size is the log of total assets. COVID-19 is the moderator which will check the impact on Islamic and conventional banks. In Equation (1), Moderator1 is the multiplication of COVID-19 and bank deposits. In Equation (2), Moderator2 is the multiplication between COVID-19 and operating efficiency. In Equation (3), Moderator3 is the multiplication of COVID-19 and bank size.

4. Empirical Results

Stata software was used to examine the validity of the formulated hypotheses and the panel data regression model tested the relationship between return on assets and the independent variables of Islamic and conventional banks in this study. In this regression model Pooled OLS was used, and this model was estimated by ignoring time series' and cross-sectional data's natures and supposing that all entities are equal in the overall time period. This model used their values of intercept which do not change over time. The Hausman test was used to select the appropriate method for estimation. The result of Hausman test indicates that in this study the fixed-effect model will be applied as its p value is 0.007, which is less than 5% (p -value = 0.007 < 0.05).

Table 3 shows the regression analysis of Islamic and conventional banks without the moderator. It indicates that there is positive and significant relationship of bank size on both Islamic and conventional banks' return on assets on the level of 1%. It explains that when the size of the bank is larger, then profitability (return on assets) of both types of banks will also increase. Islamic bank size has more impact on profitability as compared to conventional banking.

Table 3. Regression analysis of conventional vs. Islamic banking systems without moderator.

Variables	(1)	(2)
	ROA	ROA
	Conventional	Islamic
BANKSIZE	0.0126 *** (4.661)	0.0231 *** (5.243)
OPERATINGEFFICIENCY	−0.187 ** (−2.426)	−0.272 *** (−3.443)
DEPOSITS	0.00119 (0.871)	−0.00319 * (−1.824)
CONSTANT	−0.00858 *** (−3.112)	−0.0131 *** (−3.787)
Observations	240	120
R-squared	0.393	0.526
r2_a	0.3852	0.514

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The findings show that operating efficiency of Islamic and conventional banks are both significant at the level of 5%, but negatively associated with return on assets. This means that when operating efficiency increases then profitability of both banks will decrease, similar to the findings of [Al-Homaidi et al. \(2020\)](#). The deposit of conventional banks without the moderator is positively associated with profitability, but the deposit of Islamic banks is negatively associated with return on assets. This illustrates that when the deposits increase in conventional banks it will increase its profitability, but when the deposit is increasing in Islamic banks it decreases profitability. The R-square value defines how much the dependent variable is described by independent variables in percentage. The R-square value of this pool regression of conventional banks shows that the independent variable contributes to 39% of the variation in ROA, whereas the independent variable of Islamic banks has an impact of 52% on ROA which is better than conventional.

Table 4 indicates the regression analysis of conventional and Islamic banking with Moderator1. The moderator is used to see whether the bank size has a positive or negative impact on profitability due to the COVID-19 pandemic. The results of bank size of both conventional and Islamic are positive and statistically significant at the 1% level, which indicates that larger bank size has a higher impact on profitability of banks.

Islamic banks have a larger value as compared to conventional banks on ROA. Conventional bank size has a positive and significant relationship with profitability, which means that with a 1% increase in bank size, the profitability of conventional banking will increase by 2.0%. However, without the moderator it increases by 1.2% and regarding Islamic bank size, the profitability will increase by 2.7%. Operating efficiency has a negative but significant impact on ROA of Islamic and conventional banking. This means that management of bank is efficiently controlling its operational expenses. The negative relationship shows that a decrease in operating efficiency will increase the value of profitability (ROA); these results are supported by [Masood and Ashraf \(2012\)](#) and [Masood et al. \(2015\)](#). Bank deposits show a positive relationship with ROA in conventional banking but in Islamic this is negative and not statistically significant on profitability. Deposits are basically the liability of banks which they have to return back to their customers/clients, so the findings show a negative impact where with the increase in deposits the profitability of Islamic bank decreases. Moderator1 has a significant impact on Islamic banking as compared to conventional. The R-square value explains how much percentage of the dependent variables' ROA is explained by the independent variable. In this assessment, the R-square with Moderator1 of conventional banks is 41%, but in Islamic banking the R-square is better than conventional at 60.5%. Based on these results, H1 will be accepted, and the null hypothesis will be rejected because the results show that there is a significant relationship for bank size and profitability with the moderating role of COVID-19.

Table 4. Regression analysis of conventional vs. Islamic banking systems (bank size with moderator).

Variables	(1)	(2)
	ROA	ROA
	Conventional	Islamic
BANKSIZE	0.0204 *** (6.898)	0.0269 *** (2.975)
OPERATINGEFFICIENCY	−0.251 *** (−3.465)	−0.323 *** (−3.604)
DEPOSITS	0.00824 (0.648)	−0.00269 (−1.477)
COVID-19	0.00177 (0.322)	−0.0106 ** (−2.123)
MODERATOR1	0.00695 * (1.226)	0.0125 ** (2.132)
CONSTANT	−0.0129 *** (−5.011)	−0.0115 *** (−2.919)
Observations	240	120
R-squared	0.417	0.605
r _{2_a}	0.317	0.489

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5 indicates the comparison of conventional and Islamic banking with Moderator2. Moderator2 is the multiplication of operating efficiency and COVID-19 to check the positive or negative impact of the pandemic on profitability. It shows that Moderator2 has a negative but significant impact on profitability of Islamic banking with a 1% level of significance as compared to conventional banking. Operating efficiency tells us how efficiently bank management is able to control expenses. When they utilize their expenses efficiently it will directly increase their profitability.

Table 5. Regression analysis of conventional vs. Islamic banking systems (operating efficiency with moderator).

Variables	(1)	(2)
	ROA	ROA
	Conventional	Islamic
BANKSIZE	0.0188 *** (7.312)	0.0204 *** (4.082)
OPERATINGEFFICIENCY	−0.204 ** (−2.223)	−0.252 *** (−2.723)
DEPOSITS	0.000654 (0.517)	−0.00346 * (−1.971)
COVID-19	0.000458 (0.537)	0.00183 * (1.780)
MODERATOR2	−0.151 (−1.068)	−0.326 ** (−2.488)
CONSTANT	−0.0134 *** (−5.203)	−0.00996 ** (−2.500)
Observations	240	120
R-squared	0.416	0.612
r _{2_a}	0.316	0.498

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

There is negative relationship between operating efficiency and profitability as supported by previous studies (Hussien et al. 2019). With a 1% increase in operating efficiency, conventional profitability will decrease by 20.4% and Islamic profitability will decrease by

25.2%. COVID-19 is impacting both types of banking, but is more significant on Islamic banking. The R2 of Islamic banking is 0.612 which indicates that 61.2% of the change in ROA is due to the change in the independent variable; in conventional banking 41.6% of the change in the dependent variable is explained by independent variables, and the remaining 59% may be due to other factors which are not included. Therefore, H2 will be accepted because there is a negative and significant impact of operating efficiency with a beta coefficient of -0.252 for Islamic and -0.204 for conventional banking on the return on assets with the exogenous shock of COVID-19.

Table 6 indicates the result of conventional and Islamic banking with Moderator3. Moderator3 is the multiplication of COVID-19 and deposits which shows that Moderator3 has no significant effect on the profitability of Islamic or conventional banking.

Table 6. Regression analysis of conventional vs. Islamic banking systems (bank deposit with moderator).

Variables	(1)	(2)
	ROA	ROA
	Conventional	Islamic
BANKSIZE	0.0183 *** (7.069)	0.0228 *** (4.522)
OPERATINGEFFICIENCY	-0.261 *** (-3.648)	-0.316 *** (-3.396)
DEPOSITS	-0.00342 (-0.223)	-0.00372 ** (-2.022)
COVID-19	-0.00334 (-1.584)	-0.00259 (-0.652)
MODERATOR3	0.00311 (1.144)	0.000960 (0.189)
CONSTANT	-0.0129 *** (-5.001)	-0.0124 *** (-2.992)
Observations	240	120
R-squared	0.416	0.586
r2_a	0.316	0.464

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$. * $p < 0.1$.

During the COVID-19 pandemic, customer deposits did not affect much on both types of banking. It had a minimal effect and Islamic banking lacks more in deposit; this is supported by [Ludeen and Masih \(2017\)](#). Over the last few years Islamic banking has been growing but still they are lacking in deposits compared to conventional banking because interest is the main determinant for conventional banks to attract their customers to deposit. They generate their profit by paying customers a lower rate and charging a high rate to borrowers. Customers are confident that they are receiving a fixed rate against their deposit in conventional banks but profit rates in Islamic banking vary so customers are in doubt that they may be given a lower rate than in conventional banking. Deposits are the liability of banks which customers can withdraw whenever they want to ([Ludeen and Masih 2017](#)). In the COVID-19 pandemic, banks should design different marketing programs to entice customers to deposit. According to [Baicu et al. \(2020\)](#), at the start of pandemic, due to lockdown only a limited number of customers visited the bank physically. One factor is also that large number of people lost their jobs and faced financial difficulties during the pandemic ([Ichsan et al. 2021](#)). Almost 25.9% of customers only visited bank once a month and 58% of customers did not visit the bank during the pandemic. Furthermore, 92% of customers used ATMs for cash withdrawals and only 19% used them for deposits/transfers, which indicates that the customers' trend towards deposits was not significant during COVID-19. There was no significant impact on deposits; due to the pandemic and economic conditions customers did not want to deposit because of uncertainty and the financial crisis. Low- and middle-class people were more focused on withdrawal rather than deposits ([Ludeen and Masih 2017](#)). Therefore, H3 will be

rejected because there was no significant impact of deposits on bank's profitability with COVID-19 interaction.

5. Robustness Checks

Robustness checks were performed to confirm the findings. The robustness analysis was conducted on a yearly and on a quantile basis which shows similar results to that of the fixed-effect model. The sample size is split into two parts; there are 240 observations of conventional banks and 120 observations of Islamic banks. Firstly, the analysis was performed on conventional bank data, which showed almost similar results of the impact of bank size on the return on assets (profitability), which is positive and has the same 1% level of significance. Operating efficiency also has similar results with the inverse relation with profitability, but there is a difference in the significance level. It is 10%, but using the fixed-effects model, the level of significance is 5%. Customer deposit in conventional banks is insignificant in the fixed-effect model, as well as in robust analysis quarterly, which is shown in below Table 7. In Islamic banking, there were 120 observations, and the analysis was performed on a quarterly basis, which also shows similar results as the fixed-effect model, except there is a minor change in significance level. The bank size is positive and highly significant at 1%, but in robust analysis it is positive with a 5% level of significance in quarter 2. Operating efficiency also has the inverse relation with profitability, but the only change is in the level of significance which was 1% in fixed-effect modeling, but now is 5%. Deposits had an insignificant impact on return on assets in the fixed-effect analysis and also in robust analysis, which indicates similar results mentioned in Table 8 below (Paltrinieri et al. 2021).

Table 7. Quantile regression estimates for the conventional banking system.

Variables	MODERATOR1			MODERATOR2			MODERATOR3		
	q25	q50	q75	q25	q50	q75	q25	q50	q75
BANKSIZE	0.0137 *** (2.996)	0.0116 ** (2.259)	0.0268 *** (6.665)	0.0133 *** (6.011)	0.0129 *** (3.152)	0.025 *** (6.537)	0.013 *** (4.697)	0.0126 *** (3.267)	0.0209 *** (4.292)
OPERATINGEFFICIENCY	-0.248 ** (-2.386)	-0.217 * (-1.899)	-0.152 (-1.237)	-0.165 (-1.199)	-0.107 (-0.993)	-0.114 (-0.974)	-0.248 *** (-2.771)	-0.170 (-1.620)	-0.155 (-1.157)
DEPOSITS	0.00258 ** (2.173)	0.00130 (0.822)	-0.000885 (-0.279)	0.00285 ** (1.977)	0.00165 (0.956)	-0.000531 (-0.181)	0.00258 (1.125)	-5.80 × 10 ⁻⁶ (-0.00315)	-0.00497 (-1.219)
COVID-19	-0.00126 (-0.189)	-0.00792 (-0.966)	0.00697 (0.489)	0.000243 (0.215)	0.000389 (0.366)	-0.000957 (-0.630)	-0.000252 (-0.0822)	-0.00371 (-1.463)	-0.00849 ** (-2.157)
MODERATOR1	8.93 × 10 ⁻⁵ (0.121)	0.000815 (0.893)	-0.000872 (-0.560)						
MODERATOR2				-0.135 (-0.689)	-0.184 (-0.920)	0.0109 (0.0392)			
MODERATOR3							-0.00026 (-0.0640)	0.00418 (1.242)	0.0102 * (1.944)
CONSTANT	-0.0108 ** (-2.178)	-0.00746 (-1.364)	-0.018 *** (-3.539)	-0.011 *** (-6.686)	-0.0095 ** (-2.195)	-0.02 *** (-3.940)	-0.01 *** (-2.971)	-0.00765 * (-1.808)	-0.0105 (-1.649)
Observations	240	240	240	240	240	240	240	240	240

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8. Quantile regression estimates for the Islamic banking system.

Variables	MODERATOR1			MODERATOR2			MODERATOR3		
	q25	q50	q75	q25	q50	q75	q25	q50	q75
BANKSIZE	0.032 *** (4.043)	0.013 ** (2.613)	0.00287 (0.341)	0.032 *** (5.455)	0.020 *** (3.302)	0.018 ** (2.086)	0.032 *** (3.552)	0.018 ** (2.439)	0.030 *** (3.398)
OPERATINGEFFICIENCY	0 (0)	-0.302 ** (-2.465)	-0.430 *** (-2.894)	0 (0)	-0.202 (-1.114)	-0.247 (-1.348)	-0.00896 (-0.0449)	-0.388 ** (-2.433)	-0.247 (-1.438)
DEPOSITS	-0.00137 (-0.814)	-0.0004 (-0.163)	0.000464 (0.100)	-0.00137 (-1.139)	-0.00148 (-0.461)	-0.0070 (-1.447)	-0.00158 (-0.925)	-0.0023 (-0.709)	-0.009 ** (-2.129)
COVID-19	-0.00342 (-0.392)	-0.01 ** (-2.433)	-0.02 *** (-4.688)	0.000712 (0.479)	0.00221 * (1.768)	0.004 ** (2.303)	-0.00058 (-0.182)	-0.0031 (-0.625)	-0.00532 (-0.868)

Table 8. Cont.

Variables	MODERATOR1			MODERATOR2			MODERATOR3		
	q25	q50	q75	q25	q50	q75	q25	q50	q75
MODERATOR1	0.000419 (0.398)	0.001 ** (2.448)	0.002 *** (4.662)						
MODERATOR2				−0.0864 (−0.515)	−0.275 * (−1.893)	−0.5 *** (−2.668)			
MODERATOR3							0.000809 (0.193)	0.00392 (0.618)	0.00598 (0.782)
CONSTANT	−0.02 *** (−3.009)	−0.007 * (−1.759)	0.00272 (0.529)	−0.02 *** (−4.411)	−0.013 ** (−2.098)	−0.0053 (−0.887)	−0.02 *** (−2.790)	−0.0091 (−1.658)	−0.013 ** (−1.988)
Observations	120	120	120	120	120	120	120	120	120

t-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

6. Discussion

This study investigates the difference between conventional and Islamic banks with the moderating role of COVID-19. A total of 360 observations are in this statistical description which includes both Islamic and conventional banking. The results indicate that without the moderator there is a positive and significant relationship of bank size in both Islamic and conventional banks' return on assets on the level of 1%. This explains that when the size of the bank is larger, then profitability of both types of banks will also increase. However, Islamic banks have a larger value of this influence compared to conventional banks on ROA. Conventional bank size has positive and significant relationship with profitability, which means that with a 1% increase in bank size the profitability of conventional banking will increase by 2.0%. Without the moderator, it will increase by 1.2% and for Islamic bank size the profitability will increase by 2.7%. The findings show that operating efficiency of both Islamic and conventional banks are significant at the level of 5%, but negatively associated with return on assets. This means that management of bank is efficiently controlling its operational expenses. A negative relationship shows that a decrease in operating efficiency will increase the value of profitability (ROA); these results are supported by Masood and Ashraf (2012), Masood et al. (2015), and Al-Homaidi et al. (2020). The deposit of conventional banks without the moderator is positively associated with profitability, but the deposit of Islamic banks is negatively associated with return on assets. This illustrates that when the deposits increase in conventional banks it will increase its profitability, but when deposit is increasing in Islamic banks it decreases profitability. The R-square value of this pool regression of conventional banking shows that the independent variable contributes to 39% of the variation in ROA, whereas the independent variable of Islamic banks impact 52% of the ROA, which is better than in conventional banks.

Moderator1 has a significant impact on Islamic banking compared to conventional. The R-square with Moderator1 of conventional banks is 41%, but in Islamic banking R-square is better than conventional at 60.5%. Based on these results, H1 will be accepted, and the null hypothesis will be rejected because the results show that there is a significant relationship between bank size and profitability with the moderating role of COVID-19. It further shows that Moderator2 has a negative but significant impact on the profitability of Islamic banking with a 1% level of significance as compared to conventional banking. Operating efficiency tells us how efficiency bank management is able to control expenses. When they utilize their expenses efficiently banks will directly increase their profitability. There is negative relationship between operating efficiency and profitability as supported by previous studies (Hussien et al. 2019). With a 1% increase in operating efficiency, conventional profitability will decrease by 20.4% and Islamic profitability will decrease by 25.2%. COVID-19 is impacting both types of banking, but is more significant on Islamic banking. The R2 of Islamic banks is 0.612 which indicates that 61.2% of the change in ROA is due to the change in the independent variable; in conventional banking, 41.6% of the change in the dependent variable is explained by the independent variables, and the remaining 59% may be due to other factors which are not included. Therefore, H2 will be accepted because there is a negative and significant impact of operating efficiency with a beta coefficient

of -0.252 in Islamic and -0.204 in conventional banking on return on assets with the exogenous shock of COVID-19. During the COVID-19 pandemic, customer deposits did not affect much on both types of banking. It had minimal effects, and Islamic banking is lacking more in deposits, as supported by [Ludeen and Masih \(2017\)](#). Over the last few years, Islamic banking has been growing, but still it is lacking in deposits as compared to conventional banking because interest is the main determinant for conventional banks to attract their customers to deposit. They generate their profit by paying customers lower rates and charging high rates to borrowers. Customers are confident that they are receiving a fixed rate against their deposit in conventional banks but the profit rate in Islamic banking varies, so customers are in doubt whether they will be given a lower rate than conventional banks. The deposit is the liability of the bank, which customers can withdraw whenever they want to ([Ludeen and Masih 2017](#)). In response to the COVID-19 pandemic, banks should design different marketing programs to entice customers to deposit. According to [Baicu et al. \(2020\)](#), at the start of pandemic, due to lockdown only limited number of customers visited the bank physically. Another factor is that a large number of people lost their jobs and faced financial difficulties during pandemic ([Ichsan et al. 2021](#)). Almost 25.9% of customers only visited banks once a month, and 58% of customers did not visit bank during pandemic. A total of 92% of customers used ATMs for cash withdrawals and only 19% used them for deposits/transfers, which indicates that the customer trend towards depositing was not significant during COVID-19. There is no significant impact on deposits due to the pandemic; economic conditions were such that customers did not want to deposit because of uncertainty and the financial crisis. Low- and middle-class people were more focused on withdrawal rather than deposits ([Ludeen and Masih 2017](#)). Therefore, H3 will be rejected because there is no significant impact of deposits on bank profitability with the COVID-19 interaction.

7. Concluding Remarks

In this study, the comparative analysis of conventional banking and Islamic banking profitability is assessed, and the sample of this research is taken from Islamic and conventional banks of Pakistan with a moderating role of the COVID-19 outbreak. As in recent years, the COVID-19 pandemic has played an important role which affected different financial and nonfinancial sectors of the world. Despite several negative impacts of COVID-19 on the economy, it also has had some positive effects, as it boosts online banking, cardless shopping and branchless banking. With the improvement in technology, online banking rapidly increased during COVID-19, which also impacted the profitability of banking. So, it is important to see whether this pandemic has had a significant impact on profitability of Islamic or conventional banking. COVID-19 was taken as a moderator in this study and return on assets was used as a proxy to measure the profitability of banks in comparison with independent variables of bank deposits, operating efficiency and bank size. The data were collected from financial statements of 15 Pakistani banks which consisted of 10 conventional banks and 5 Islamic banks. The growth of Islamic banking is increasing day by day. Quantitative data were used, which covered 6 years from 2016 to 2021. There was a total of 360 observations. Firstly, Pooled OLS was used, and then after the Hausman test, the result indicated that the fixed-effect model was more suitable compared to random. Different issues such as heteroskedasticity and multicollinearity were not found in these data. The findings showed that there were positive and significant relationships with profitability, deposits and size, but negative relationships with the operating efficiency of Islamic banks and conventional banks with the moderating role of COVID-19. There were more significant results with Islamic banking. The moderating role of COVID-19 has slightly affected conventional banking, but it is highly significant on bank size, operating efficiency and profitability and insignificant on bank deposits. So, the result indicates that Islamic banking is more affected by the external condition (COVID-19) than conventional banking. Furthermore, with the moderating role of COVID-19, this indicates that during

the pandemic, customer trends or beliefs were more centered on Islamic banking compared to conventional banking in Pakistan.

Researchers can conduct future studies on the comparison of banking profitability with other developing nations which will help them. With the passage of time, the Islamic banking sector is growing, so this will help future researchers to perform research on different areas of Islamic banking. Future researchers can conduct their studies by taking different pandemics or situations such as natural disasters (flood, dengue) as a moderator. Islamic banking is increasing rapidly, so banks must try to increase their deposits as well as manage their expenses in order to maximize their profitability, as this pandemic affected different sectors of the Pakistan economy. Banking is a meaningful part of the Pakistani financial system, hence it is essential to assess whether such outbreaks impair the banking sector.

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