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Profitability of Islamic Banks in Pakistan: An Empirical Analysis

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Abstract
The main object of this study is to investigate the Profitability of Islamic banks in Pakistan. The data duration of the study is 2006-2021 and penal regression analysis is used to test the Profitability of Islamic banks in the context of Pakistan. This study applied the Variance Inflation Factor (VIF), Breusch-Godfrey Serial Correlation LM and Breusch-Pagan-Godfrey tests to check the multicollinearity autocorrelation and heteroscedasticity respectively. According to the Hausman test, Redundant Effect Test is suitable for the current study. Results of the Random Effect Method indicate that the GDP and BS have statistically significant as well as positive effects on the Return on Assets (ROA). While the IR, NPL, and INF have statistically significant and negative effect on the Return on Assets (ROA). Results of the study suggest that factors that have a negative effect on the ROA, like interest rate, non-performing loan, and the inflation rate would be judgmentally investigated by the Islamic Bankers of Pakistan through structuring the bank's policies. That would give support in the banks' better performance and enhanced profitability, which would directly improve to their significant role in the economy.
Keywords: Return on Assets, Gross Domestic Product, Bank Size, Interest Rate, Non-performing Loans, Earning per Share, Inflation, Islamic Banks, Pakistan

1. Introduction

In previous several decades, the banking sector has grown and evolved at an incredible rate around the world. Pakistan's banking system is expanding at an astonishing rate, beyond all expectations, and banks in Pakistan traditionally provide the majority of funding. Banks act as a facilitator for all industries, contributing to national income, growth, and development. However, in an era of hyper-competition, the banking sector is facing new issues, one of which is liquidity management, and profitability in Islamic banking. As a result, the investigation of the influence of profitability management on bank performance has become a hot topic among stakeholders in the Pakistani banking sector (Bagh et al, 2017). Profitability, on the other hand, is a firm's measure of financial performance. Liquidity should be kept at a balanced level.

The price-to-earnings ratio is used to determine an organization's profitability. Every organization's primary goal is to increase profitability, and every company seeks to obtain the best results possible. Because a strong connection exists between liquidity as well as profitability, the organization must maintain an optimal level of liquidity. In today's globe, the banking industry has emerged as the most crucial driver of job creation and economic growth. The financial industry has found it more challenging to attain optimum profitability as technology has advanced (Dabiri et al, 2017; Abdur-Rauf & Raimi, 2024).

According to Bagh et al. (2017) the financial industry acts as an economy's cornerstone and plays a significant role in the development and expansion of an economic growth of the country. Banks act as intermediaries for a variety of industries, including textiles, cotton, agriculture, small and medium enterprises, manufacturing, construction, start-up finance, and many others, contributing directly to national income. A country's growth and development are largely dependent on the banking system's sound footing. It serves as a nucleus for the seamless operation of economic activities both within a country and beyond the world, and subsequent reconstruction and innovation in the sector have raised the living standard.

The factors of profitability in the banking business have been extensively examined. Profitability is measured differently in each research. The important profitability measures are Return on Assets (ROA) and Net Interest Margin (NIM).

2. Literature Reviews

Customers' savings are used by banks to finance company activities, resulting in more job possibilities, more income, and a higher standard of living. Majeed and Zainab (2017) investigated that from 2006 to 2014, this research compares the financial banks' Performance to that of conventional banks. The performance of Islamic and conventional banks in Pakistan is analyzed and compared in this research using Financial Ratio Analysis (FRA). Islamic banks are better financed, less risky, and have more liquidity, according to the findings. Islamic banks, on the other hand, are less profitable than conventional banks. In Pakistan, data for Burj Bank, Dubai Islamic Bank, and Bank of Khyber is not accessible for 2006. To attain economies of scale and improve efficiency, the Islamic banking industry's size should be increased by merging with Islamic financial institutions. Investors, creditors, debtors, and management will benefit from the research. It also provides regulators and policymakers with the most up-to-date information for developing financial industry laws and policies in Pakistan.

According to Ramlan and Adnan, the profitability of Islamic and conventional banks in Malaysia is similar (2016). The research period is from 2006 to 2011, with 2006 as the starting date. In this study, the T-Test Model, Regression, and Correlation are used. Meanwhile, data is gathered from the Bursa Malaysia stock exchange and Malaysian bank websites. Islamic banks are more profitable than conventional banks, according to this data, and their total loan-to-total asset ratio is higher than conventional banks. According to the regression test, ROE has an impact on traditional bank profitability. The profitability of Islamic banks is influenced by their return on assets (ROA) and return on equity (ROE) (ROE). According to the correlation test, ROE has an effect on traditional bank profitability, however in Islamic banks, ROA and ROE have a substantial association with the independent variable Total Equity to Total Asset.

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From 2000 to 2013, Javaid and Alalawi (2018) looked at all internal and external factors that contributed to the profitability of 9 Islamic banks in the Saudi Arabian region. As it prepares to join the World Trade Organization, Saudi Arabia's region has undergone structural changes. Furthermore, the time period is long enough to see the effects of substantial regional changes on financial intermediaries. The study investigates the impact of bank-specific, industry-specific, and macro-economic variables on profitability using unbalanced panel data and a robust fixed effect model of regressions. The findings show that Islamic bank profitability is influenced by bank characteristics, industry conditions, and macroeconomic variables. According to our empirical data, the capital adequacy coefficient is positive and extremely significant for both profitability indicators, showing that Saudi banks are in good financial shape. The positive and high leverage ratio, on the other hand, implies that Saudi Islamic banks rely heavily on debt financing, making them riskier in nature, even if profitable to some extent, and potentially vulnerable to economic downturns. As a result, a diversified portfolio is required to maintain future stability as well as to reduce risk and uncertainty. According to the data relating to industry-specific characteristics, Saudi Arabia's banking sector is extremely competitive.

Chiahti et al., (2021) investigated the factors that affect a bank's financial performance and compared Islamic and conventional banks. Dependent variables like ROA, ROE, and PER, as well as independent variables like bank size, age, GDP growth, and inflation, are used to calculate profitability. The first variable, bank size, has a negative impact on the ROA and ROE of Islamic banks while having a positive impact on the ROA and ROE of traditional banks. Larger Islamic banks are not necessarily more profitable. Second, Islamic banks' ROA is negatively affected, while traditional banks' ROA is positively affected. The third factor is GDP growth, which has a negative influence on Islamic banks' ROA and ROE while having a favorable but minor impact on conventional banks' ROA and ROE. Inflation has a favorable influence on Islamic banks' ROA while it has a negative effect on traditional banks' ROA, according to the fourth assessed outcomes of inflation. Financial ratios such as ROA, ROE, and PER are based on accounting statistics, which are susceptible to errors and approximation. When two similar organizations use different accounting systems, the outcomes will be different. For example, if one company uses FIFO and the other uses LIFO, the results will be different.

3. Methodology

The study comprises the panel of four Islamic banks of Pakistan which are engaged in serving nation instead of serving a particular Industry or a particular group of people. To find the relationship between dependent variable and independent variable in Islamic Banks in Pakistan, the study used annual data from 2006 to 2021. Annual reports of Banks obtained from their websites. Website of state bank of Pakistan has also been helpful to collect annual reports of commercial banks operating in Pakistan.

To investigate the profitability of the Islamic Banks in Pakistan. Mathematical equation of the model is below.

ROA = f (GDP, BS, IR, NPL, EPS, INF)

Following econometric model is used to analyze the relationship between dependent and independent variables:

ROA_{it}= β0 + β1 GDP_{it}it +β2 BS_{it} +β3 IR_{it} + β4 NPL_{it} + β5 EPS_{it} + 65 INF_{it} + + ε

Here;

ROA = Return on Assets
GDP = Gross Domestic Product
BS = Bank Size
IR = Interest Rate
NPL = Non-performing Loans
EPS = Earnings per Share
INF = Inflation
ε=Error Term

4. Results

4.1. Descriptive Statistics

Descriptive statistics is applied to perceive the patterns and predicting the future values of the variables. This is subdivided into central tendency measures and variability measures (spread).

Findings of the table show that Mean Median, Maximum and minimum values of the Return on Assets (ROA) are (2.729906), (1.7), (16.83), (0.01) and for Gross Domestic Product (GDP) are (8.326563), (8.1), (17.5), (0.1), for Bank Size (BS) are (43852286), (7537936), (2.38008), (1778), for Interest Rate (IR) are (9.354063), (9.66), (13.11), (6.13), for Non-performing Loans (NPL) are (2.526081), (1.8054), (15.7), (0.01), for Earning per Share (EPS) are (2.526081), (1.8054), (15.7), (0.01), and for Inflation (INF) are (4.544688), (4.6), (11.2), and (0.1) respectively.

The standard deviation indicates the average out of the used data while the larger standard deviation value indicated a wider distribution. Values of the standard deviation of the Return on Assets (ROA), Gross Domestic Product (GDP), Bank Size (BS), Interest Rate (IR), Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF) are (3.672176), (4.369442), (62015605), (2.694913), (5.01728), (2.706421), and (2.413859) respectively.

Symmetric data pattern is calculated by the level of skewness. Values of all variables as Return on Assets (ROA), Gross Domestic Product (GDP), Bank Size (BS), Interest Rate (IR), Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF) are positively skewed. Kurtosis show about data distribution whether it is Leptokurtic or Platykurtic. Kurtosis standard value is 3, If value is more than 3, then data distribution is leptokurtic while data distribution is Platykurtic when value is less than 3. Data of ROA, BS, EPS and INF show the leptokurtic distribution while the data of GDP, IR and NPL show the Platykurtic distribution.

Table 1: Descriptive Statistics

	ROA	GDP	BS	IR	NPL	EPS	INF
Mean	2.729906	8.326563	43852286	9.354063	5.246719	2.526081	4.544688
Median	1.7	8.1	7537936	9.66	3.355	1.8054	4.6
Maximum	16.83	17.5	2.38E+08	13.11	19.04	15.7	11.2
Minimum	0.01	0.1	1778	6.13	0.01	0.01	0.1
Std. Dev.	3.672176	4.369442	62015605	2.694913	5.01728	2.706421	2.413859
Skewness	3.02083	0.207608	1.421269	0.094461	0.627051	2.975773	0.695465
Kurtosis	10.85368	2.573108	4.06914	1.362977	2.270223	12.81339	4.891034
Jarque-Bera	261.8184	0.945708	24.59489	7.241426	5.61426	351.2629	14.69518
Probability	0	0.623221	0.000005	0.026764	0.060378	0	0.000644
Sum	174.714	532.9	2.81E+09	598.66	335.79	161.6692	290.86
Sum Sq. Dev.	849.5473	1202.797	2.42E+17	457.5412	1585.905	461.457	367.0831
Observations	64	64	64	64	64	64	64

Source: Software E-Views 9.0

4.2. Correlation Metrix

Correlation Metrix show that the bivariate correlation among the variables in the model. It also represents the direction and strength of the variables. Whether they are positively correlated or negatively correlated in the model.

Table 2: Correlation Metrix

	GDP	BS	IR	NPL	EPS	INF
GDP	1					
BS	-0.31438	1				
IR	0.670333	-0.40249	1			
NPL	-0.04222	-0.22605	-0.01617	1		
EPS	-0.31677	-0.18396	-0.36087	-0.14088	1	
INF	-0.69433	0.124401	-0.22094	-0.00703	0.16718	1

Source: Software E-Views 9.0

Results of the correlation metrix indicate that Gross Domestic Product (GDP) is negatively correlated with the Bank Size (BS), Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF) while it is positively correlated only with the Interest Rate (IR) in this study. Similarly, Bank Size (BS) is negatively correlated with the Interest Rate (IR), Non-performing Loans (NPL) and Earning per Share (EPS) while it is positively correlated only with the Inflation (INF) in this model. Likewise, Interest Rate (IR) is negatively correlated with the Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF). Non-performing Loans (NPL)) is negatively correlated with the Earning per Share (EPS) and Inflation (INF). At last Earning per Share (EPS) is positively correlated with the Inflation (INF) in this study.

4.3. Multicollinearity

Variance Inflation Factors is applied to check the multicollinearity in the data. The results of the table indicate that multicollinearity not exist in the data because the values of every variable is less than 10 (Rule of Thumb is: The value of VIF < 10).

Table 3: Variance Inflation Factors

Variable	VIF
GDP	4.327312
BS	1.628497
IR	2.713012
NPL	1.184118
EPS	1.514678
INF	2.456102

Source: Software E-Views 9.0

4.4. Autocorrelation

Breusch-Godfrey Serial Correlation LM Test is applied to check the autocorrelation in the data. The probability value of autocorrelation is less than 0.05. This means that autocorrelation is present in this data.

Table 4: Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	39.46178	Prob.value	0.000

Source: Software E-Views 9.0

4.5. Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey is applied to test the heteroskedasticity.

Table 5: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	22.38386	Prob.Value	0.000

Source: Software E-Views 9.0

The probability value of heteroskedasticity is less than 5%. This means there is heteroskedasticity in the data.

4.6. Redundant Test

The Redundant test is applying to determine whether the Common Constant Method or Fixed Effect Method is more suitable for this study. If probability value is more than 5% then Common Constant Method is more effective but if the probability value is less than 5% then Fixed Effect Method is more effective.

Table 6: Redundant Fixed Effects Tests

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.632477	(3,54)	0.0001
Cross-section Chi-square	25.07262	3	0

Source: Software E-Views 9.0

Results of the test indicate that the probability value of Redundant test is less than 5% that is why applying the Fixed effect method is suitable method for this study.

4.7. Hausman Test

The Hausman test is applying to determine whether Fixed Effect Method or Random Effect Method is more suitable. If value of the probability e is more than 5% then Random Effect Method is more effective but if the value of the probability is less than 5% then Fixed Effect Method is more effective.

Table 7: Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.375096	6	0.9674

Source: Software E-Views 9.0

The probability value of Hausman test is more than 5% thus, applying Random Effect Method is more suitable for this study.

4.8. Regression Analyses (Random Effect Method)

Random Effect Method is applied to check the Profitability of Islamic banks in Pakistan. Return on Assets (ROA) is dependent variable but the Gross Domestic Product (GDP), Bank Size (BS), Interest Rate (IR), Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF) are the independent variables in this model of the study.

Table 7: Random Effect Method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	0.077249	0.046664	1.655433	0.0139
BS	1.182308	1.20E-08	1.81533	0.0452
IR	-0.04167	0.108224	-0.38504	0.0181
NPL	-0.03903	0.032137	1.214463	0.0301
EPS	0.104069	0.066776	1.558478	0.1252
INF	-0.03073	0.101073	-0.30406	0.0236
R-squared	0.799047	F-statistic	29.53813	
Adjusted R-squared	0.771996	Prob(F-statistic)	0.000	
Durbin-Watson stat	1.707135			

Source: Software E-Views 9.0

Results of the Random Effect Method indicate that the coefficient and probability values of Gross Domestic Product (GDP) are 0.077249 and 0.0139 respectively that indicate GDP has positive as well as significant effect on the Return on Assets (ROA). Which means one unit increase in the GDP will lead to 0.077249 units increase in the Return on Assets (ROA). Thus, GDP become the cause to enhance the Profitability of Islamic banks in Pakistan.

Similarly, the coefficient and probability values of Bank Size (BS) are 1.182308 and 0.0452 respectively that indicate BS has positive as well as significant effect on the Return on Assets (ROA). Which means one unit increase in the BS will lead to 1.182308 units increase in the Return on Assets (ROA). So, as the Bank Size of the Islamic banks increased, it would bring to enhancement in the profitability of banks in Pakistan.

Moreover, the coefficient and probability values of Interest Rate (IR) are (-0.04167) and (0.0181) respectively that indicate IR has negative and significant effect on the Return on Assets (ROA). Which means one unit increase in the IR will lead to 0.04167 units decrease in the Return on Assets (ROA). This result predicts that increase in the interest rate will decrease the profitability of the Islamic Banks because due to the higher interest rate people will not take loans from the banks and it will also demoralize the borrowings in the economy of Pakistan. This result is similar with the (Muzammil & Siddiqui, 2020).

Furthermore, the coefficient and probability values of Non-performing Loans (NPL) are (-0.03903) and (0.0301) respectively that indicate NPL has negative and significant effect on the Return on Assets (ROA). Which means one unit increase in the NPL will lead to 0.03903 units decrease in the Return on Assets (ROA). So, Non-performing Loans (NPL) will decrease the profitability of the Islamic Banks in Pakistan.

Furthermore, the coefficient and probability values of Earning per Share (EPS) are 0.104069 and 0.1252 respectively that indicate EPS has positive and insignificant effect on the Return on Assets (ROA). Which means, it is not taking the part in the profitability of the Islamic Banks in Pakistan in this study.

Additionally, the coefficient and probability values of Inflation (INF) are (-0.03073) and (0.0236) respectively that indicate INF has negative and significant effect on the Return on Assets (ROA). Which means one unit increase in the INF will lead to 0.03073 units decrease in the Return on Assets (ROA). So, Inflation (INF) will decrease the profitability of the Islamic Banks in Pakistan. Due to higher inflation, savings funds will be discouraged that decrease the total investment funds and this shortage in savings of the Islamic banks 'causes great effect on its profitability (Alharbi, 2015; Mohammed & Muhammed, 2017; Olorogun & Othman, 2024; Omri, 2022; Ustaoglu & Yildiz, 2023).

Value of the R-squared is 0.799047 that indicate that 79.9 % variations of dependent variable are explained by the independent variables in this model of the study. The F-statistics value is 29.53813 and P-value is zero. It is statistically significant that confirm the validity of model and model is fit for analysis. Serial correlation problem is test through the value of Durbin Watson in this model which is 1.707135 that show serial correlation problem is not present and its value is very near to the ideal value 2. Henceforth the selected variables for this study are identified as good fit for this analysis.

5. Conclusion

The main object of this study is to investigate the Profitability of Islamic banks in Pakistan. Return on Assets (ROA) is dependent variable but the Gross Domestic Product (GDP), Bank Size (BS), Interest Rate (IR), Non-performing Loans (NPL), Earning per Share (EPS) and Inflation (INF) are the independent variables in this model of the study.

Data duration of the study is 2006-2021 and penal regression analysis is used to test the Profitability of Islamic banks in the context of Pakistan. Descriptive statistics is applied to perceive the patterns and predicting the future values of each variable. Correlation Metrix is used to check the bivariate correlation among the variables in the model. Whether they are positively correlated or negatively correlated. To test the multicollinearity, Variance Inflation Factor (VIF) is used that's results indicate it is not present in the data. BreuschGodfrey Serial Correlation LM Test is applied to check the autocorrelation in the data. Breusch-Pagan-Godfrey is applied to test the heteroskedasticity. Result of the Hausman test show that Redundant Effect Test is suitable for this study.

Results of the Random Effect Method indicate that the GDP has positive as well as significant effect on the Return on Assets (ROA). Thus, GDP become the cause to enhance the Profitability of Islamic banks in Pakistan. Similarly, the BS has positive as well as significant effect on the Return on Assets (ROA). So, as the Bank Size of the Islamic banks increased, it would bring to enhancement in the profitability of banks in Pakistan. Moreover, the IR has negative and significant effect on the Return on Assets (ROA). This result predicts that increase in the interest rate will decrease the profitability of the Islamic Banks because due to the higher interest

rate people will not take loans from the banks and it will also demoralize the borrowings in the economy of Pakistan. This result is similar with the (Haron & Ahmed, 2008; Muzammil & Siddiqui, 2018).

Furthermore, the NPL has negative and significant effect on the Return on Assets (ROA). Non-performing Loans (NPL) will decrease the profitability of the Islamic Banks in Pakistan. Also, the EPS has positive and insignificant effect on the Return on Assets (ROA). This means, it is not taking the part in the profitability of the Islamic Banks in Pakistan in this study. Additionally, the INF has negative and significant effect on the Return on Assets (ROA). Inflation (INF) will decrease the profitability of the Islamic Banks in Pakistan. Due to higher inflation, savings funds will be discouraged that decrease the total investment funds and this shortage in savings of the Islamic banks 'causes great effect on its profitability (Alharbi, 2015; Mohammed & Muhammed, 2017). Factors that have negative effect on the ROA, like interest rate, non-performing loan and inflation rate would be judgmentally investigated by the Islamic Bankers of Pakistan through structuring the bank's policies. That would give support in the banks' better performance and enhanced profitability, which would directly improve to the significant role in the economy.

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