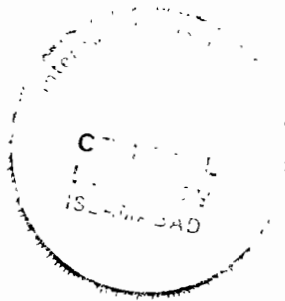


**Impact of Corporate Governance, Market Structure,  
Institutional and Environmental Factors on Bank  
Performance; Moderating Role of Financial Reporting  
Quality: Evidence from Asia-Pacific Region**



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**Impact of Corporate Governance, Market Structure,  
Institutional and Environmental Factors on Bank  
Performance; Moderating Role of Financial Reporting  
Quality: Evidence from Asia-Pacific Region**



**By**

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A research thesis submitted to the Faculty of Management Sciences, International Islamic University, Islamabad, in partial fulfillment of the requirements for the Degree of

**DOCTOR OF PHILOSOPHY IN MANAGEMENT SCIENCES  
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In the name of Allah, the most merciful and beneficent



**(Acceptance by the Viva Voce Committee)**

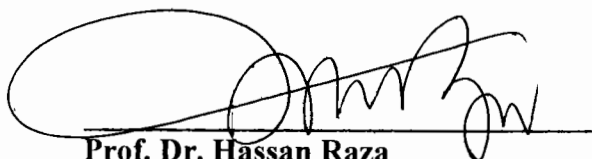
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Accepted by the Faculty of Management Sciences INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD, in partial fulfillment of the requirements for the Doctor of Philosophy Degree in Management Sciences with Specialization in Finance.

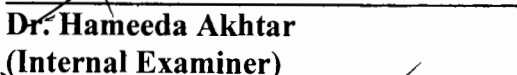
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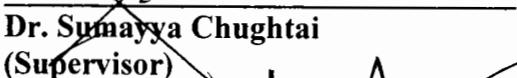
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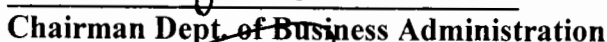
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**Date: 23-6-2022**

## **DEDICATION**

I dedicate this thesis to my father (late) and mother, whose sayings are always a source of  
inspiration for me.

Today, where I stand is just because of the prayers of my mother and sacrifices of my  
family.

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## DECLARATION

I, Mr Hafiz Muhammad Athar Abbas (Registration No. 59-FMS/PHDFIN/S16), now declare that my PhD thesis titled, '**Impact of Corporate Governance, Market Structure, Institutional and Environmental Factors on Bank Performance; Moderating Role of Financial Reporting Quality: Evidence from Asia-Pacific Region**' is my work and has not been copied out from any source. It is further declared that I have prepared this thesis entirely based on my effort made under the sincere guidance of my supervisor and colleagues. No portion of the work presented in this thesis has been submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

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The book written by Paulo Coelho titled "The Alchemist" is a source of inspiration for me. The book's central theme is to passionately chase your dreams/destiny with your heart. The book provides a lesson that you doesn't give up on the way to achieve your goals/objectives. Whatever the circumstances/difficulties you face in your life, no matter what you do, make sure that you do it because it is what your heart and soul desire.

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**FORWARDING SHEET**

The Thesis entitled “**Impact of Corporate Governance, Market Structure, Institutional and Environmental Factors on Bank Performance; Moderating Role of Financial Reporting Quality: Evidence from Asia-Pacific Region**”, submitted by Mr. Hafiz Muhammad Athar Abbas has partial fulfillment of PhD degree in Management Sciences with specialization in Finance, has completed under my guidance and supervision. The changes advised by the external and internal examiners have also been incorporated. I am satisfied with the quality of student’s research work and allow him to submit this thesis for further process as per IIU rules and regulations.

**Date:** \_\_\_\_\_**Signature:** \_\_\_\_\_**Supervisor Name :** Dr Sumayya Chughtai

## Table of Contents

<b>CHAPTER 01 .....</b>	<b>1</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1. Background of Study .....	1
1.2. Theoretical Background .....	7
1.2.1. Information Asymmetry Theory .....	7
1.2.2. Financial Intermediation Theory .....	8
1.2.3. Corporate Governance Theories .....	9
1.3. Gap Analysis .....	12
1.4. Problem Statement .....	14
1.5. Research Question(s) .....	16
1.5.1. General Question (s) .....	16
1.5.2. Specific Question (s) .....	16
1.6. Research Objective (s) .....	17
1.6.1. General Objective (s) .....	17
1.6.2. Specific Objective (s) .....	17
1.7. Scope of the Study .....	18
1.8. Potential Contribution .....	19
1.9. Organization of the study .....	20
<b>CHAPTER 02 .....</b>	<b>21</b>
<b>2. Literature Review and Hypotheses Development.....</b>	<b>21</b>
2.1. Bank Performance .....	21
2.2. Bank Specific Factors .....	24
2.2.1. Asset Quality and Bank Performance .....	25

2.2.2.	Liquidity and Bank Performance .....	27
2.2.3.	Capitalization and Bank Performance .....	29
2.2.4.	Size of Bank and Performance.....	31
2.3.	Corporate Governance .....	33
2.3.1.	Board Size and Bank Performance .....	34
2.3.2.	CEO Duality and Bank Performance .....	37
2.3.3.	Gender Diversity and Bank Performance .....	38
2.3.4.	Ownership Structure and Bank Performance.....	42
2.4.	Market Structure Factor and Bank Performance .....	43
2.5.	Institutional Factors and Bank Performance .....	46
2.6.	Corporate Social Responsibility Disclosure Index and Bank Performance.....	49
2.7.	Financial Reporting Quality (FRQ) as a Moderating Variable.....	52
2.7.1.	Financial Reporting Quality as a Moderator between Corporate Governanceand Bank Performance .....	54
2.7.2.	Financial Reporting Quality as a moderator between Corporate Social Responsibility Disclosure Index and Bank Performance .....	56
2.8.	Control Variables .....	58
2.9.	Theoretical Framework.....	64
<b>CHAPTER 03</b>	.....	<b>67</b>
<b>3. Research Design and Methodology</b>	.....	<b>67</b>
3.1.	Population and Sample of Region and Countries .....	67
3.2.	Population and Sample of Banks .....	70
3.3.	Data Mining .....	71
3.4.	Data Collection Procedure .....	72
3.4.1.	Sources for collection of Information .....	72



3.5. Methodology .....	72
3.5.1. Variables Description, its Measurement, and Literature Support .....	72
3.5.2. Defining Variables .....	75
3.5.2.1. Corporate Social Responsibility Disclosure Index .....	75
3.5.2.2. Institutional Factors .....	76
3.5.2.3. Earning Management as a Proxy for Financial Reporting Quality .....	77
3.5.2.4. Performance of the Banking Sector .....	79
3.6. Model Specification .....	80
3.6.1. Multiple Regression Model .....	81
3.6.3. Financial Reporting Quality as a moderator .....	83
3.7. Estimation Techniques .....	84
3.7.1. Panel Estimation Techniques .....	85
3.7.2. Generalized Method of Moments (GMM) .....	86
3.7.3. Quantile Regression .....	87
3.8. Software Used .....	87
<b>CHAPTER 04 .....</b>	<b>90</b>
<b>4. Results and Discussion .....</b>	<b>90</b>
4.1. Efficiency Analysis .....	90
4.2. Preliminary Analysis .....	92
4.2.1. Descriptive Statistics and Assumption of Normality .....	93
4.2.2. Assumption of Multi-Collinearity .....	95
4.2.3. Assumption of Homoscedascity .....	97
4.2.4. Assumption of Stationarity .....	97
4.2.5. Checking Outliers .....	98
4.3. Regression Analysis .....	99

4.3.1. Multiple Regression Model By Examining the Individual Impact of Explanatory Variables on Performance .....	99
4.3.2. Multiple Regression Model By Examining the Joint Impact of Explanatory Variables on Performance .....	124
4.3.3. Financial Reporting Quality as a Moderator.....	157
4.3.3.1. Moderating Role of Financial Reporting Quality with respect to Return on Assets and Efficiency .....	157
4.3.4. Comparison of the Results of Estimation Techniques Used in the Study .....	161
<b>CHAPTER 05.....</b>	<b>165</b>
<b>5. Conclusion .....</b>	<b>165</b>
5.1. Summary and Conclusion .....	165
5.2. Implication of the Study.....	166
5.3. Potential Contribution of the Study .....	166
5.3.1. Theoretical Contribution.....	167
5.3.2. Practical Contribution .....	168
5.3.3. Contextual Contribution.....	169
5.4. Limitations and Future Recommendations .....	170
<b>References.....</b>	<b>172</b>

## LIST OF TABLES

Table No.	Description	Page No.
Table-1	Hypothesis Summary Analysis of Previous Research /Literature	60-63
Table-2 (a)	Criteria for the Selection of the Region	67
Table-2 (b)	Criteria for selection of countries in the Asia-Pacific Region	69
Table-2 (c)	Criteria for Selection of commercial banks in the countries of Asia-Pacific Region	71
Table-3	Variables Description, Abbreviations, Measurement and Literature Support	73-75
Table-3 (a)	Summary of items included in CSR disclosure Index	76
Table-3 (b)	Measurement of Economic Freedom Index	77
Table-3 (c)	Measurement of Global Competitiveness Index	77
Table-3 (d)	Input and Output Selection for DEA analysis	80
Table-3 (e)	Summary of the Estimation Techniques Used in the Study	88
Table-3 (f)	Similar Studies in the past by using Panel Data Estimation Techniques	89
Table-4	Efficiency Scores of sampled countries of Asia-Pacific Region Individually and Collectively for 2013-2018	91
Table-5	Preliminary Analysis to Check the Assumptions of Regression Model	92
Table-5 (a)	Descriptive Statistics and Assumption of Normality by Using Jarque-Bera Test	93-94
Table-5 (b)	Assumption of Multi-Collinearity by Using Correlation and Variance Inflation Factors	96
Table-5 (c)	Assumption of Homoscedascity by Using Breusch-Pagan Test	97
Table-5 (d)	Assumption of Stationarity by Using Panel Unit Root Test	97-98
Table-6	Multiple Regression Model by examining the individual impact of explanatory variables on bank performance	
Table-6(a)	Panel Estimation Techniques (Return on Assets)	100-101

Table-6(b)	Panel Estimation Techniques (Efficiency)	102-103
Table-6(c)	Quantile Regression (Return on Assets)	108-110
Table-6(d)	Quantile Regression (Efficiency)	111-112
Table-6(e)	Quantile Regression Process at 25%, 50% and 75% (Return on Assets)	116-119
Table-6(f)	Quantile Regression Process at 25%, 50% and 75% (Efficiency)	120-123
Table-7	Multiple Regression Model by examining the joint/collective impact of explanatory variables on bank performance	
Table-7 (a)	Panel Estimation Techniques (Return on Assets)	124-126
Table-7 (b)	Panel Estimation Techniques (Efficiency)	127-128
Table-7 (c)	GMM Estimation Technique (Return on Assets)	133-134
Table-7 (d)	GMM Estimation Technique (Efficiency)	135-136
Table-7 (e)	Quantile Regression (Return on Assets)	141-142
Table-7 (f)	Quantile Regression (Efficiency)	143-144
Table-7 (g)	Quantile Regression Process at 25%, 50% and 75% (Return on Assets)	149-152
Table-7 (h)	Quantile Regression Process 25%, 50% and 75% (Efficiency)	153-156
Table-8	Moderating Impact of Financial Reporting Quality (FRQ)	157-158
Table-9 (a)	Comparison of the Results of Estimation Techniques from Equation 1 to 6 (a,b) by Using Step by Step Multiple Regression Model	162
Table-9 (b)	Comparison of the Results of Estimation Techniques from Equation 7 (a) to 11(a) by Using Step by Step Multiple Regression Model	163
Table-9 (c)	Comparison of the Results of Estimation Techniques from Equation 7 (b) to 11(b) by Using Step by Step Multiple Regression Model	164
Table-10	Stakeholders, their expectations, and bank responsibilities	208-210
Table-11 (a)	Hypothesis Summary Analysis of the Results of Static Panel Estimation Technique	225-227
Table-11 (b)	Hypothesis Summary Analysis of the Results of Quantile Regression	228-230
Table-11 (c)	Hypothesis Summary Analysis of the Results of Dynamic Panel Estimation Technique	231-233
Table-13	List the names of commercial banks of sampled countries in the Asia-Pacific Region	261-283

## LIST OF FIGURES

Figures	Description	Page No.
Figure 1.2.	Linking with Theoretical Framework	11
Figure 1.4.	Stakeholders interests in Bank Performance	15
Figure 2.7.2.	Earning Management as a moderator	57
Figure 2.9.1.	Theoretical Framework	65
Figure 2.9.2.	Theoretical Framework	66

## LIST OF ANNEXURES

Annexure	Description	Page No.
Annex-I	Development of CSR disclosure Index	234-236
Annex-II	Legal, Regulatory and Supervisory Frameworks of Sampled Countries of the Asia-Pacific Region	238-240
Annex-III (a)	International Commitments regarding CSR	242-244
Annex-III (b)	National Policies regarding Sustainable Finance in Asia-Pacific Region	245-247
Annex-IV	List the names of Regulatory Authorities of the Sampled Countries of the Asia-Pacific Region	248
Annex-V	Trend Analysis of the Ten Countries of the Asia-Pacific Region	249-251

## LIST OF GRAPHS

<b>Graphs</b>	<b>Description</b>	<b>Page No.</b>
Graph-1 (a,b)	Criteria for the Selection of the Region	68
Graph-2	Criteria for selection of countries in the Asia-Pacific Region	69
Graph-3 (a)	Applying Cook Distance to Check Outliers on 179 Sampled Banks	211-218
Graph-3 (a)	Applying Cook Distance after eliminating Outliers on 175 Sampled Banks	219-224
Graph-4.	Trend Analysis of Ten Countries of Asia-Pacific Region	
Graph-4.1(a to e)	Demographic and Macro-Economic Factors	252-253
Graph-4.2 (a to d)	Financial Sector Development	254-255
Graph-4.3(a)	Institutional Factors such as Economic Freedom Index	256
Graph-4.4(a to d)	Institutional Factor such as Global Competitiveness Index	257-258
Graph-4.5(a to f)	Worldwide Governance Indicators	259-260

## Abstract

The study aimed to investigate the impact of various factors on the performance of the banking sector by taking a data of one hundred and seventy-five commercial banks from the ten countries of the Asia-Pacific region over the period of 2013-2018. The study gathered information about the variables by using national and international sources such as bank scope, annual reports, world development index, etc. The primary objective of this study was twofold: firstly, to assess the impact of bank-specific factors/CAELs (capitalization, asset management, earning, liquidity, size of the bank), governance-related factors (board of directors size (BoDs), CEO duality, gender diversity, foreign ownership), market-related factors (competition), institutional factors and environmental factors (corporate social responsibility disclosure) on efficiency and profitability; and Secondly, to examine the moderating effect of financial reporting quality (FRQ hereafter), as measured by earning management, on independent-dependent variables. This study used return on assets (ROA) and technical efficiency to measure the bank performance. The study used non-parametric approach such as data envelopment analysis as a technique (DEA) to measure the efficiency. The study used information asymmetry theory, financial intermediation theory, governance theories, tokenism and critical mass theory, market structure hypothesis, and stakeholder's theory to explain the relationship between explanatory variables and bank performance. The study used static panel estimation techniques, generalized methods of moments (GMM) and quantile regression for statistical analysis. The results of static panel estimation techniques demonstrated that non-performing loans (NPLs), advances, the board size, and gender diversity reveal a significant positive impact on efficiency, while deposits and bank size found a significant negative relationship with efficiency. Furthermore, it has been observed that deposits, loans, capitalization, and competition have a significant and direct relationship with profitability, whereas NPLs, gender diversity, CEO duality, ownership structure, and environmental factors showed a significant and indirect/inverse impact on ROA. The results of GMM estimation techniques elucidated a significant and direct influence of NPLs, loans, the board size, and gender diversity on efficiency; however, deposits, bank size, ownership structure, environmental factors, and global competitiveness index showed a significant and inverse influence on efficiency. Moreover, the variables such as deposit, loans, capital ratio, and competition influenced ROA significantly and positively. It has also been noticed that NPLs, size of banks, CEO duality, gender diversity, ownership structure, and environmental factors influenced profitability significantly and negatively. The results of the Quantile regression exhibited that loans and participation of women on board report a significant and positive impact on efficiency. At the same time, CEO duality, environmental factors, competition, and economic freedom index have a significant and negative impact on efficiency. Furthermore, the variables such as capital ratio, bank size, the board size, CEO duality, ownership structure, environmental factor, competition, and economic freedom index depict a significant and positive impact on ROA, while NPLs, deposits, loans, gender diversity, and the global competitiveness index showed a significant and negative influence on profitability. The results obtained from the study imply that CAELs (asset quality, liquidity, capitalization, bank size), corporate governance, competition, institutional and environmental factors affect the health of financial intermediaries. This is because of imperfect information, high transaction cost, non-adherence of domestic and international regulations, ineffective board, promote nepotism, corruption, ineffective monitoring and supervision, agency problems (unaligned goals), conflict of interests, directors remuneration,

gender diversity such as female role into board as a showpiece or key influencers, weak regulatory and supervisory frameworks/policies, non-disclosures, economic and market conditions, lack of transparency and accountability, earnings manipulation etc. Moreover, the managers can benefit from imperfect information by manipulating the reporting disclosures (via loan loss provision/reserves) by presenting the accounts as more lucrative/attractive to the various stakeholders. Thus, the stakeholders can take their decision on distorted information. The issue can be resolved by developing a better information system, modern technology, more digitalization, effective governance mechanisms, more diversity into board, communicate banks policy among the employees and available on its website, responsible lending, sharing more disclosures, etc. The study helps the various stakeholders by knowing how demographic dynamics, asset-financing structure, capitalization levels, board size, leadership structure, gender diversity, competitor strategies, reporting manipulations/window dressing, sustainable disclosures, institutional and economic conditions, etc., influence the bank performance so they craft their policies accordingly. It is proposed that similar research in other financial institutions or industries may also be conducted by using larger sample size, increasing the number of years, and adding new variables.

**Keywords:** data envelopment analysis, return on assets, information asymmetry theory, tokenism/critical mass theory, market power, institutional factors, financial reporting quality, corporate social responsibility disclosure.



# **Impact of Corporate Governance, Market Structure, Institutional and Environmental Factors on Bank Performance; Moderating Role of Financial Reporting Quality: Evidence from Asia-Pacific Region**

## **CHAPTER 01**

### **1. Introduction**

This chapter provides insights to the reader about the background of the study, justification of the variables used in the study, theoretical underpinning (how the variables used in the study are relevant to the theory), gap analysis, problem statement, research questions, research objectives, scope, and potential contribution.

#### **1.1. Background of Study**

The role of financial sector is important for economic progress, growth, and development of the country (Aziz & Knutsen, 2019; Batir et al., 2017; Chortareas, Girardone, & Ventouri, 2013). The study of Ahmed and Bashir (2016) contend that no economy can make progress without substantial growth in the banking sector, as it channelizes the savings from surplus sectors (households) to deficit sectors (investors/governments) in order to generate economic activities in the country. The primary function of commercial banks is to accept deposits from depositors offering at a lesser interest rate and lend them to borrowers at a higher interest rate.

It has been noticed that most of the economic crises such as WorldCom, Enron, Baring Bank scandal, Tesco accounting scandal, Xerox, BT Italia, Asian Financial Crisis, Lehman Brothers, global financial crisis, Panama Leaks, Pandora Leaks, Paradise Leaks, and Suissex Leaks, etc., exposed significant vulnerabilities to the financial sectors. No doubt these scandals were occurred as a result of excessive borrowings, risky over-lending, heavy existence of non-performing loans, illiquidity of assets, inadequate credit analysis, political interferences to write-off loans, fraudulent practices such as window dressing/earning manipulation, illicit flow of money through placement, layering and integration (money laundering), lack of information sharing, etc. Moreover, poor governance, feeble regulatory

and supervisory framework, ineffective monitoring and supervision, inadequate auditing and accounting standards, weak internal control systems, the same person performing both audit and accounts function, conflict of interest, intense competition, adverse economic conditions/weak institutional factors are also considered to be the significant reasons for such scandals (Bank for International Settlement, 2015; Wahyudin & Solikhah, 2017). The question, which would be worth exploring, is how the above-mentioned factors empirically influence the bank performance and stakeholders interests (Szegedi, Khan & Lentner, 2020).

The study is critical for various stakeholders as it helps the management, shareholders/investors, depositors, borrowers/creditors, communities, environment and society, regulators such as government and central banks, employees, credit rating agencies, researchers to identify the factors influencing banking sector performance so that they can take their decisions optimally and formulate policies accordingly. Broadly, two factors affect bank performance, i.e., internal and external factors. Internal factors are under management control, such as bank-specific, governance, corporate social responsibility disclosure, reporting manipulations, etc. However, external factors are beyond the control of management, such as political, social, regulatory (central bank and government), macro-economic, technological, competition, demographics/contextual, etc. These factors may positively or negatively influence the bank's performance and ultimately affect stakeholders' interests.

Here, we discuss how these factors affect bank performance. For example, asset quality measured by the non-performing loans to total loans represents the risk related to the various assets held by the financial institutions. The higher value of this ratio is an indicator of poor loan quality that exposes banks to face default risk that arises as a result of the failure of the borrowers to meet their payment obligations (bad debts). Hence, it impedes/undermines the performance of the banking sector. So, the banks may face solvency/default risk (Batir et al., 2017; Yao et al., 2018; Kusi, Gyeke-Dako, Agbloyor & Darku, 2018). The liquidity ratio (deposits and loans/advances) represents the financing-asset structure of the banking sector. These ratios may also positively or negatively influence the bank's performance. The higher value of the financing/liability structure (deposit to total assets) indicates the illiquidity of assets. This implies that banks' disbursing a lesser amount of loans to borrowers hampers economic activities and restricts bank profitability. So, it increases the probability that the banks may be unable to meet the obligations of customers to

pay back the money or face the risk of maturity mismatches/liquidity and reputation. This situation induces the depositors to switch their accounts to another bank to obtain higher interests. It depends upon how the managers develop liability management strategies (Menicucci and Paolucci, 2016; Batir et al., 2017; Rodney & Jing, 2018; Hasanov, Bayramli & Al-Musehel, 2018).

Similarly, there are three implications of the higher value of the asset structure ratio (loans/total assets). On one side, it is an indicator of the higher profitability as more lending implies more generation of interest revenue if banks can effectively monitor and manage credit risks (Tan, 2016; Hasanov et al., 2018), while, on the other hand, more lending may lead to increases the risk of bankruptcy, that amplifies the financing costs and decreases banks' earnings (Goddard, Liu, Molyneux & Wilson, 2013; Shawtari et al., 2015; Batir et al., 2017). Thirdly, it indicates the bank's inability to meet liquidity requirements that may lead to overnight borrowing. Capitalization depicts the financial strength of the banks or their ability to absorb captivated shocks or losses or unanticipated losses. This ratio may affect the shareholder's interests as they are owners of the company. The shareholders would look to get maximum return on their investment in the form of dividends and to ensure that their money is not being wasted. Hence, they can lose their capital if the interests of shareholders and managers are unaligned (Batir et al., 2017; Bitar, Pukthuanthong & Walker, 2018; Jensen & Meckling, 1976; Salike & Ao, 2017; Yao et al., 2018). Bank size is included to determine its impact on performance. The larger size of the banks positively influences their performance due to the economies of scale, more market power, ease of obtaining equity at shorter notice, raising the debt at lower cost, broader asset diversification (Adeabah, Gyeke-Dako & Andoh, 2018; Hasanul, Rubi & Eric, 2017; Menicucci & Paolucci, 2016). Conversely, the banks may also face the dilemma of the too big to fail paradigm due to diseconomies of scale, mismanagement, bureaucratic issues, and engaging in more risky investments. They argued that larger banks adversely affects the performance (Aslam & Haron, 2020; Athanasoglou, Brissimis, & Delis, 2008; Batir et al., 2017; Lin et al., 2016).

Corporate governance is significant as it protects the interest of the shareholders, controls agency problems, encourages separation of ownership and control, and makes managerial monitoring effective to attain the firm objectives and performance (Arora & Sharma, 2016; Mollah, Hassan, Al Farooque, and Mobarek, 2017; Merendino & Melville, 2019; Ullah, Fang and Jebran, 2020; Vafeas & Theodorou, 1998). It may also affect the

bank's performance positively or negatively and ultimately various stakeholders. For example, two perspectives are prevailing in the literature regarding board size. The supporters contend that the larger boards are better as the members hold a wide range of knowledge, skills, information, and experience to make better decisions (Andersson & Wallgren, 2018; Arora & Sharma, 2016; Farag, Mallin, & Ow-Yong, 2017; Merendino & Melville, 2019; Riyadh, Sukoharsono, & Alfaiza, 2019). However, the opponent claims that the larger boards are less effective as it becomes difficult to coordinate and encourage free-riding. Each member has an interest that may conflict with the firm's interest. So, they state that a smaller board reduces these drawbacks and allows each member to become more accountable (Conyon & He, 2017; Jayati & Subrata, 2018; Jensen, 1993; Ullah et al., 2020). Similarly, two strands of literature are available regarding CEO duality. The agency theory postulates an inverse relation of CEO duality with performance as it creates managerial monitoring ineffective (Farag et al., 2017; Jayati & Subrata, 2018; Jensen, 1993; Krause, Semadeni, & Cannella, 2014). Conversely, stewardship theory finds a direct and positive relation of CEO duality with performance and contends that it makes managerial monitoring effective as insiders have more information and knowledge about the organization than outsiders (Aslam & Haron, 2020; Bennouri et al., 2018; Noguera, 2020). Similarly, gender diversity is also significant as males and females are traditionally, culturally, and socially different. It is included to determine its role in the corporate board as a showpiece (tokens) or key influencers and how it improves organizational performance (Conyon & He, 2017; Nadeem, Zaman & Saleem, 2017 in Australia; Owen & Temesvary, 2018; Salim, 2013 in Indonesia). The critical mass theory suggests that the critical mass of women (30%) is necessary to influence the bank performance positively and indicates the behaviour of key influencers (Andersson & Wallgren, 2018; Bennouri et al., 2018; Ullah et al., 2020), while the tokenism theory postulates that less than 30% of women on board influence bank performance negatively and shows the behaviour of token women (Kilic, 2015; Tomislava et al., 2018). The proxy used for ownership structure is foreign ownership. It is preferred over others as it enjoys the benefits of a more capital, product differentiation, advanced technology, and knowledge transfer that enables to increase its ability to manage risk and enhance efficiency (Aslam & Haron, 2020; Berger, Hasan & Zhou, 2009; Herdjiono & Sari, 2017 in Indonesia; Jayati & Subrata, 2018; Rashid, 2020; Williams, 2003 in Australia).

The market structure, as measured by concentration ratio, is one of the strategies of bank competition affecting bank performance. The supporters claimed that there exists a positive relationship of concentration with bank performance provide justification (i) Bank earns supernormal profits in a highly concentrated market due to lower cost of collusion or less competition. The results are aligned with the structure conduct performance hypothesis (Bain, 1956; Shawtari, Ariff, & Hamzah, 2015; Sufian et al., 2016) (ii) by offering well-differentiated products in the market (Shepherd, 1982); (iii) by lowering the cost of doing business and operational costs (Demsetz, 1973); (iv) due to effective management, advanced technology, and economies of scale. These justifications align with the X-efficiency and Scale efficiency hypothesis (Berger, 1995). Hicks (1935), Sathye (2001), Berger and Hannan (1998), Doumposa et al. (2017) and Yao et al. (2018) find a negative relationship between more concentration (lesser competition) with efficiency due to poor management. The results align with the quiet life hypothesis. Marquez (2002) concludes that high competitive markets or low concentrated markets have an inverse relationship with performance due to adverse selection of the borrowers that creates bad debts and rapid switching of the customers from one bank to another that weakens the financing structure. The previous scholars support the association between concentration and performance (Niklas & Rasmus, 2016; Yao, Haris, & Tariq, 2018 in Pakistan).

Several scholars (Arias, Maquieira, and Jara, 2019; Aziz & Knutsen, 2019; Chan & Karim, 2016; Mavrakana & Psillaki, 2019; Asteriou, Pilbeam and Tomuleasa, 2021) believed that institutional factors, as measured by economic freedom index and global competitiveness index, is considered to be the significant factor to influence the bank performance. The higher score of institutional factors is an indicator of more efficient banks (Bitar et al., 2018; Emmanuel, Joshua, Anthony, & Mohammed, 2017; Sufian & Habibullah, 2010 in Malaysia). There are many benefits of a better economic freedom index and a global competitiveness index. Such an index attracts foreign firms and financial institutions for investment, generates economic activities, employment, the productivity of businesses, increases healthy competition, etc. This causes banks to lend more money in diversified sectors to reduce their risk and increase their income (Asteriou, Pilbeam, & Tomuleasa, 2016).

As measured by the corporate social responsibility disclosure (CSR/D) index, the environmental factors influence the bank's performance. The disclosures are essential as they provide SMART (specific, measurable, attainable, realistic/reliable, and timely) information

to the internal and external stakeholders so that they can take their decisions accordingly (Ujah, Brusa, & Okafor, 2017). It reduces the information and agency costs by sharing valuable and quality information between the principal (bank) and agent (stakeholders). The disclosures are included as the banks get many benefits such as improving their image/reputation, improving the retention and loyalty of the customer, attracting investors and prospective employees, improving relations with regulators, improving employee productivity, and reducing the cost of capital. The disclosures may positively or negatively influence the performance of the banking sector. The previous studies find a positive relationship between disclosures with performance that is in line with stakeholder's theory, arguing that a firm's objective is to protect the interest of all the stakeholders instead of only shareholders (Maqbool & Zameer, 2018; Belasri, Gomes, & Pijourlet, 2019; Freeman, 1984; Szegedi, Khan, & Lentner, 2020). Conversely, the opponents observed an inverse association of disclosure with performance in accordance with the agency theory justifying that engaging in CSR brings an additional expense to firms. They argued that the bank's primary responsibility is to increase the bank's profit and shareholder wealth, and doing anything else will be a misuse of the authority that decline its profit (Fahad and Busru, 2021; Forgione, Laguir, & Stagliano, 2020; Friedman, 1970; Oyewumi, Ogunmeru, & Oboh, 2018).

Financial reporting quality, as measured by loan loss provisions, is vital to the internal and external stakeholders in the light of information asymmetry theory (Ujah, Brusa, & Okafor, 2017). If the interest of the managers and various stakeholders is unaligned, managers can benefit from the imperfect information to manipulate the financial statements. This opinion is consistent with the agency theory and information asymmetry theory. Similarly, lesser chances of manipulation exist where the interests of both the stakeholders are aligned. This viewpoint is in line with stewardship theory. The available literature indicates that the managers can manipulate earnings due to income smoothing, external expectations to attract prospective investors, and meet internal stakeholders' expectations. This study helps the management in their earning management decision-making process regarding whether they should be involved in CSR activities or not and to what extent they should engage in the earning manipulation. The scholars used to investigate the moderating effect of financial reporting quality include Suteja, Gunardi, and Mirawati (2016) and Latif, Bhatti, and Raheman (2018).

In a nutshell, the study helps the various stakeholders such as the management, shareholders/investors, depositors, borrowers/creditors, communities, environment and society, regulators such as government and central banks, employees, credit rating agencies, researchers to understand the causes of non-performing loans, asset-liability management, capitalization levels, minimizing the agency cost, competitor strategies, regulators policies, reporting manipulations, disclosure protocols, etc., affecting the bank performance. So, all the stakeholders need to have deep knowledge and understanding of the factors affecting banks' efficiency and profitability to protect their interests.

## **1.2. Theoretical Background**

The theories discussed in this section include information asymmetry theory, financial intermediation theory, agency theory, stewardship theory, tokenism/critical mass theory, and stakeholders theory. These theories explain the association of bank-specific factors, governance factors, market structure, institutional, and environmental factors with bank performance. A brief explanation is given below.

### **1.2.1. Information Asymmetry Theory**

The theory posits that imperfect information exists between buyers and sellers that creates adverse outcomes in certain markets (Akerlof, 1970). The inadequate/poor information elucidates an information gap between banks and various stakeholders that causes the problem of moral hazard and adverse selection. The former exists when only the borrowers, not the lenders, know about the actual returns after project completion, or the borrowers indulge in such activities that decrease the chances of a loan being paid. Similarly, adverse selection occurs when the lenders are unable to differentiate the projects having different credit risks in a market due to lesser information. It may also arise due to imperfect information/knowledge when the lenders cannot distinguish between good and bad borrowers. The difference between both the problems is that the former reduces the chances that a loan will be repaid while the latter enhances the probability that loans will be made to bad debts.

The theory is relevant as it explains the theoretical framework of this study. The theory suggests that imperfect information between banks (board of directors/managers/agent) and various stakeholders (depositors, borrowers, investors/shareholders, CEO duality, gender diversity, competitors, regulators) enforce the

party having more information to use it in their benefits. The imperfect information influence the decision making process of the management regarding the bank financing structure, asset structure, borrower selection, dividends payout, investment policies, agency problems, duality issues, reporting manipulation, disclosures protocols, institutional frameworks, etc. Resultantly, the banks may face the default risk, credit risk, liquidity risk, solvency risk, reputation risk, etc. Ultimately, declines in banks' profits, government tax revenues, increase in unemployment and poverty, etc.

### **1.2.2. Financial Intermediation Theory**

The theory was developed by Gurley and Shaw (1960). The theory exists because of information and transaction costs that arises as a result of imbalanced information between banks and many stakeholders. According to this theory, intermediaries reduce the transaction and information costs, liquidity risk, and debt renegotiation. Andries (2009) argues that the intermediaries exist due to the following categories of factors such as imperfect information in valuable time, the high cost of the transaction, and the type of regulation. There are three different views regarding financial intermediation theory, i.e., Claus and Grimes (2003) argue that intermediaries exist due to the provision of liquidity and the transfer of risk characteristics of the assets. Secondly, Benston and Smith (1976) argue that the intermediaries can decrease the cost of transfer of funds between borrowers and lenders. They said that better technology and more digitalization could reduce the transaction cost between banks and their customers (depositors and borrowers). The transaction cost includes the transfer cost of the amount of exchange rate, research cost, and development cost. Lastly, the scholars (Guttentag and Lindsay, 1968; Merton, 1995) argue that how the regulations affect the role of financial intermediaries. They noted that regulation affects the liquidity and banks' solvency. They argue that regulations jeopardize the health of financial intermediaries, their capacity for providing loans, and the technique for recovering non-performing loans.

The theory is relevant as it explains the theoretical framework of this study. The financial intermediaries overcome the problems of asymmetric information by developing a better information system, such as the creditworthiness of the borrower, reasons for rapid switching of depositors from one bank to another, know-how about competitor strategies, and by disclosing and sharing more disclosures (Berger & De Young, 1997; Marquez, 2002). Secondly, an effective regulatory/institutional framework is required to reduce the information gap between banks and regulators. Thirdly, banks should follow the regulatory



policies/procedures issued by the monetary authorities regarding liquidity, capitalization, advances loans, governance, sustainable/green financing, risk management, competition, etc.

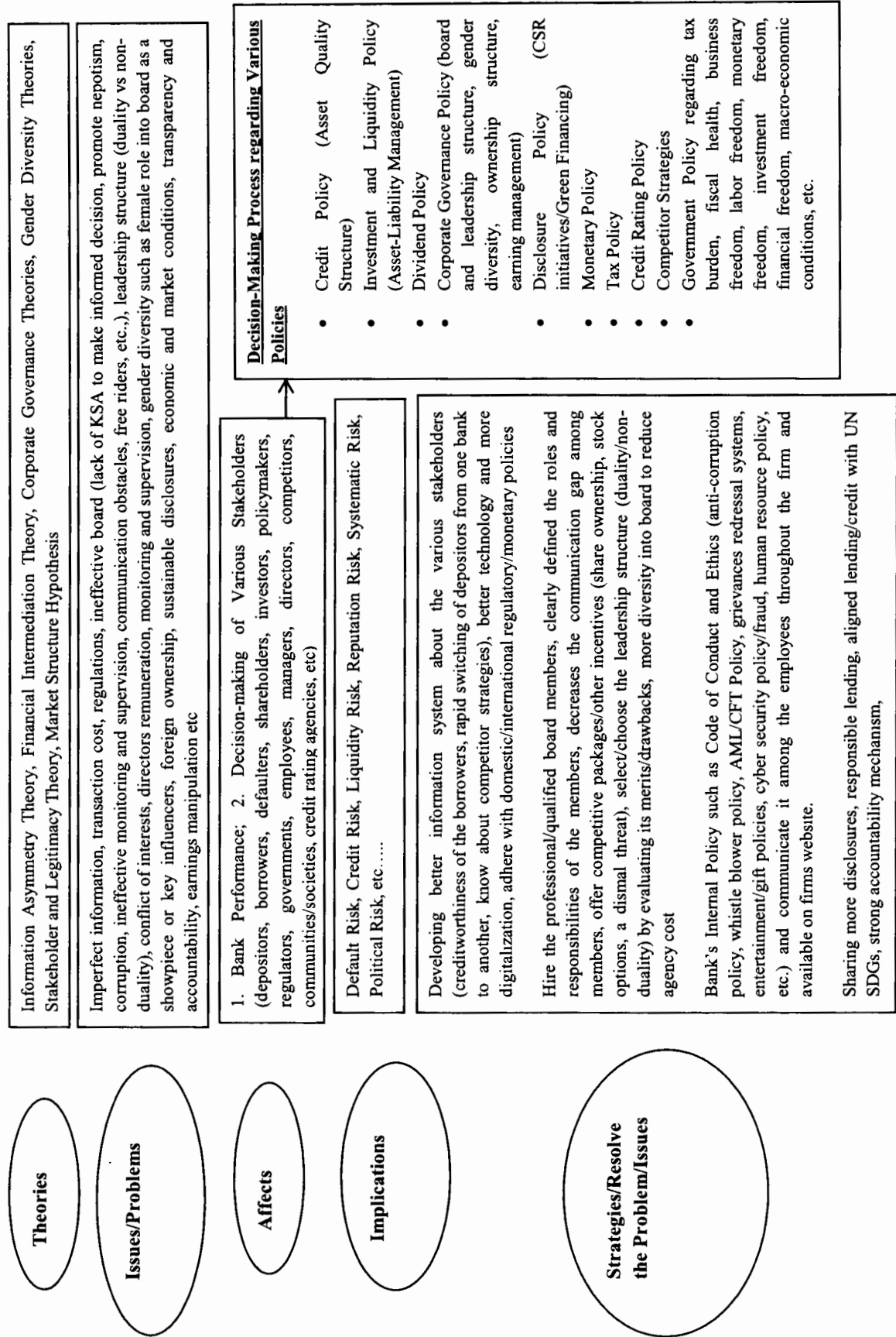
### **1.2.3. Corporate Governance Theories**

The agency theory posits the association between the principal (shareholders) and agent (managers/bankers). The theory states that (i) both (principals and agents) pursue to maximize their interests; (ii) agents may not always work in the best interest of the principal. The agency problems arise if the interests/expectations of principal(s) and agent(s) are unaligned, then the managers/directors can manipulate the financial statements for their benefit or use the company resources to increase their benefits instead of maximizing shareholders' wealth. This all happens due to asymmetric information existing in the market. The theory favours the notion of division of ownership and control, whereas it criticizes the dual role of the CEO (CEO and Chairman). Duality exhibits a conflict of interest that may affect the boards' independence and oversight role (Jensen & Meckling, 1976; Krause, Semadeni & Cannella, 2014). The theory also suggests that foreign directors bring diversity and enhance performance to promote the growth and development of the financial system. Conversely, the stewardship theory posits that managers act as trustworthy individuals, so they always work in the best interest of the organization (Donaldson & Davis, 1991; Kiel & Nicholson, 2003). The theory supports the duality concept (the same person should be CEO and Chairman). It assumes that insiders have better knowledge and information about the organization, making managerial monitoring effective in achieving the firm's objectives. They further argue that duality will facilitate solid and unified leadership and its role of monitoring.

The stakeholder theory posits the association between stakeholders and organizations. It is based on the assumption that the firm must meet the expectations/demands of all the stakeholders and involve the stakeholders in the policy formulation stage (Freeman, 1984). It is the opposite to the agency theory that only safeguard the shareholders and company interests. However, the stakeholder's theory focuses on safeguarding and protecting the interests of various stakeholders. The theory further emphasizes that if the information gap is less between banks and various stakeholders, it will increase their confidence and improve the firm's reputation. Ultimately, this enhances the performance of the banking sector. Legitimacy theory argues that a social contract exists between organization and society. This implies that organizations must fulfill obligations by taking into consideration the values and

norms of the society. One way to legitimize their actions through the disclosure of CSR activities in their annual report (Gray et al., 1995; Deegan, 2002).

The theories better explaining the association between diversity and bank performance include tokenism theory and critical mass theory (Kanter, 1977). The tokenism theory postulates that less than 30% of women on board influence bank performance negatively and shows the behaviour of token women. The token women on the board may face discriminatory behaviour and thus face obstacles in decision-making. The token women on the board may face three types of fear: visibility, polarization, and assimilation (Kanter, 1977). Firstly, visibility implies that token women always look at themselves and work hard to receive recognition for their voice/achievements. Secondly, polarization exhibits that they may encounter solitudes on the board as the dominant group is reluctant to share the informal information. Finally, assimilation reveals that dominants induced tokens into a clichéd class. So, their identity is altered forcefully. All these fears create issues in decision-making. The extant literature indicates that these issues may be resolved when thirty percent of directors are female on the board of directors (Strydom, Yong, & Rankin, 2016). The critical mass theory suggests that the critical mass of women (30%) is necessary to positively influence the bank performance and indicate key influencers' behaviour. The theory states that gender diversity brings diversity in decision-making. The theories argue that more female participation on the board reduces agency risk and variety in decision-making. Gender diversity is included in determining its role in the corporate board as a showpiece (tokens) or key influencers and how they improve organizational performance (Conyon & He, 2017; Nadeem et al., 2017; Owen & Temesvary, 2018). The theory suggests that imperfect information, ineffective monitoring, and unaligned goals influence the relationship between the principal (shareholders) and agent (board of directors/managers). These factors restrict the bank's profits. The firms having better governance mechanisms can protect the shareholder's interests, control agency issues, attain the organization's objectives and performance by decreasing the information gap between banks and various stakeholders, and by offering competitive packages/other incentives (share ownership, stock options, a dismal threat, etc.) to the agents (Arora & Sharma, 2016; Vafeas & Theodorou, 1998).



**Figure 1.2. Linking with Theoretical Framework**

### 1.3. Gap Analysis

Most of the empirical studies in the past has investigated the influence of few of the dimensions of bank-specific (Alharthi, 2016; Avramidis et al., 2018), corporate governance (Arora & Sharma, 2016; Andersson & Wallgren, 2018; Owen & Temesvary, 2018; Ullah et al., 2020; Ali, Wahla, Rasheed, and Ibrahim, 2020; Ullah, 2020), environmental (Belasri et al., 2019; Szegedi et al., 2020; Oyewumi et al., 2018), market and institutional factors (Asteriou, Pilbeam and Tomuleasa, 2021, Aziz & Knutsen, 2019; Chan & Karim, 2016; Niklas & Rasmus, 2016; Sarpong-Kumankoma, Abor, Aboagye, Amidu, 2021) on bank performance by using accounting and market measures, but little research available to measure it with efficiency. Furthermore, there is a lack of research available to examine the moderating role of financial reporting quality, as measured by earning management. This study is different from other studies in a number of ways:

1. For instance, Alharthi (2016), Abdul-Hamid et al. (2017) and Avramidis et al. (2018) examined the relationship between bank-specific factors and performance by using accounting and market measures. These studies suggested the future researchers to determine the relationship of bank-specific factors with performance (especially efficiency) in the light of information asymmetry theory.
2. In past, several scholars such as Arora & Sharma (2016), Andersson & Wallgren (2018), and Ullah et al. (2020) determined the impact of board structure on bank performance by using accounting and market measures. These studies recommended the future researchers to investigate the impact of new dimension of corporate governance such as gender diversity on bank performance. The study included gender diversity to determine its role into the corporate board as a showpiece (tokens) or key influencers and how they improve organizational performance (Conyon & He, 2017; Nadeem et al., 2017; Ajili and Bouri, 2018; Owen & Temesvary, 2018).
3. The studies of Ajili and Bouri (2018), Andries et al. (2018) and Ullah (2020) used corporate governance index to examine its influence on bank performance in GCC, European countries and Pakistan respectively. This study fills the gap by investigating the impact of each of the dimension of corporate governance, namely board size, CEO duality, foreign ownership, and gender diversity on bank performance separately instead

of making indices as aggregating the effect of different dimension may not provide much help in designing effective and specific managerial strategies (Conyon & He, 2017; Andersson & Wallgren, 2018; Andries, Capraru, and Nistor, 2018; Ullah et al., 2020 and Ullah, 2020).

4. Moreover, majority of the scholars (Szegedi et al., 2020; Oyewumi et al., 2018) have investigated the relationship between environmental factors (as measured by corporate social responsibility disclosure) and banks performance by using profitability measures, while Belasri et al. (2019) determined the impact of such relationship on banks efficiency. This study is different from previous one as it examines the relationship between sustainable disclosure and bank efficiency by using the estimation techniques based on conditional means (panel estimation techniques) and conditional median (quantile regression).
5. Likewise, majority of the scholars determined the relationship of market factors (as measured by concentration) and institutional factors with economic growth and bank stability/profitability/market measures. There is a little empirical evidence available to measure it with bank efficiency. This study fills the gap by examining the relationship of both the factors with banks profitability and efficiency as suggested by Asteriou, Pilbeam and Tomuleasa (2021), Sarpong-Kumankoma, Abor, Aboagye, Amidu (2021), Aziz & Knutsen (2019), Mavrakana and Psillaki (2019), Chan & Karim (2016) and Niklas & Rasmus (2016).
6. There is a scarcity of literature examining the moderating role of financial reporting quality. In the past, most researchers used governance factors, institutional factors, gender diversity, corporate philanthropy, etc., as a moderator. However, this study explores the moderating role of financial reporting quality whether it moderates the relationship of the corporate governance factors and CSR disclosure with bank performance as proposed by Chimkono (2016), Suteja et al. (2016); Sial et al. (2018) and Selcuk (2019).
7. This study evaluates the impact of bank-specific, governance, market, institutional and environmental factors on bank performance by using profitability and efficiency measures in a single model as proposed by Alharti, 2016; Henriques et al., 2018; Phan et al., 2018.

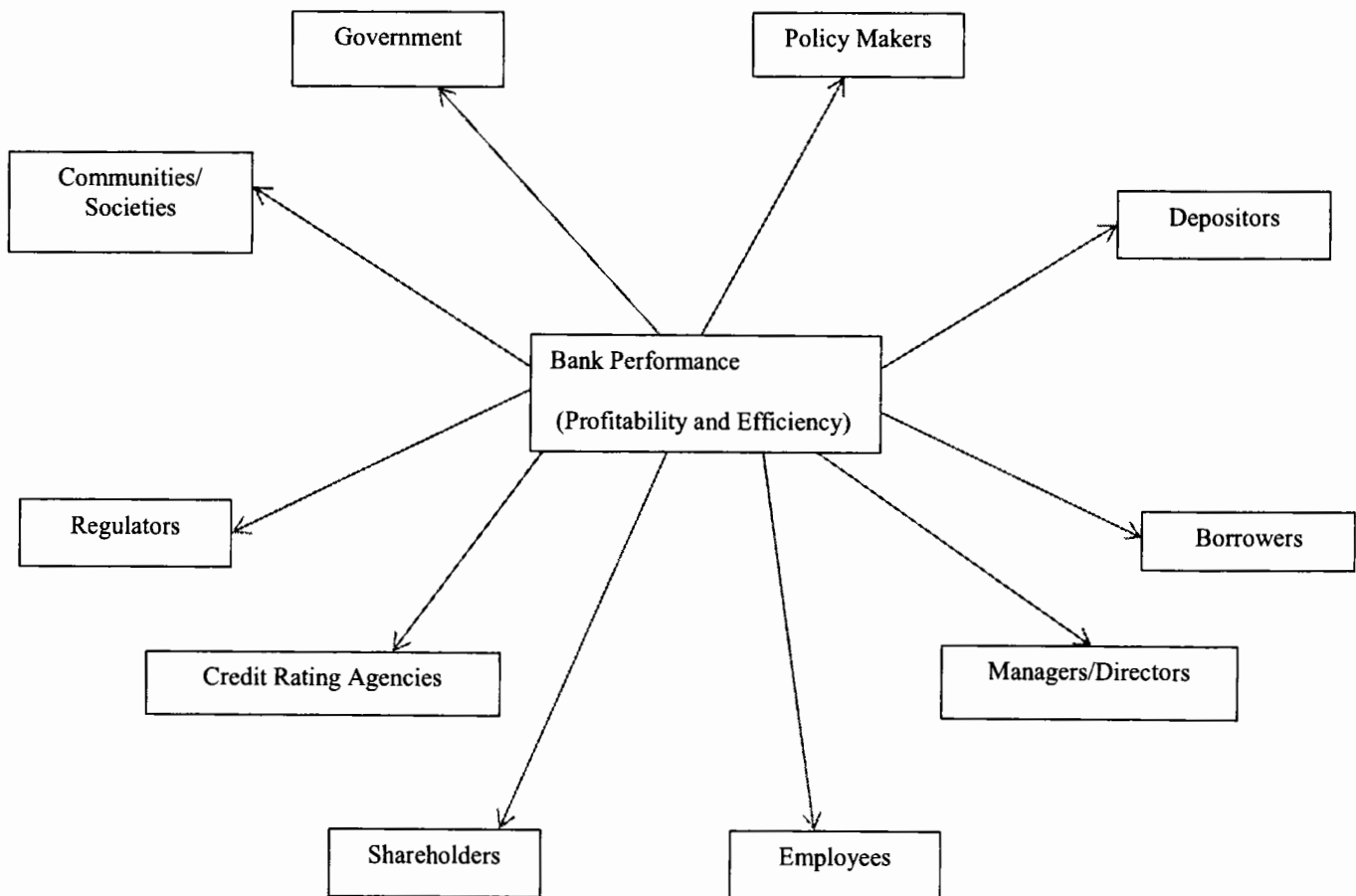
8. In past, majority of the scholars used static panel estimation techniques (Maqbool and Zameer, 2018; Varnita et al., 2018), others used generalized method of moments (Aziz and Knutsen, 2019), few of them used quantile regression (Conyon and He, 2017), and smart partial least square (Riyadh et al., 2019). This study used estimation techniques based on conditional means (static panel estimation and dynamic panel estimation-generalized method of moments) as well as on conditional median (quantile regression) as proposed by Conyon and He (2017) and Yao et al. (2018). The quantile regression is used as it is less prone to the influence of the outliers in the data and tells us about the significant value of each variable at different quantiles levels.

Keeping in view of the above literature, this study tries to fill the gaps as mentioned above.

#### **1.4. Problem Statement**

The good performance of the banking sector depends upon well-capitalized management, sound credit and liquidity policy, better governance, strong institutional factors, disclosure protocols, etc. If these factors are not adequately managed, banks may face several risks such as default, credit, liquidity, reputational, systemic, political, etc. These risks not only disturb the whole financial system but also adversely affect the interests of numerous stakeholders such as shareholders, depositors, borrowers, regulators (central bank and government), investors, employees, academicians, policy managers, board of directors, communities, environment, and society, etc. For example, depositors are adversely affected as the banks cannot meet their obligations. Similarly, borrowers cannot get loans from banks, while, on the other side, there is a probability that already established borrowers may default. Moreover, shareholders want to get maximum return on their investment and ensure that their money is not stolen or wasted. Hence, they can lose their capital in such circumstances. Furthermore, employees, managers, and directors feel insecure about their jobs and remuneration. The communities/societies are adversely affected as banks cannot provide loans for philanthropic activities. Governments are also adversely affected as they cannot take loans from the banks to meet deficit budget and also declined their revenues as well (in the shape of reduction in tax collection from the commercial banks). The banks may also be affected as politicians write-off their loans from commercial banks. The central banks also made a tight or lenient monetary policy in light of the performances of commercial banks. Hence, we can say that performance of the banking sector is the main concern for all the stakeholders. Here the question arises that what will happen if

banks' and stakeholders' interests are unaligned? Or How the management meets the expectations of stakeholders and protects the interest of banks simultaneously? How do the various factors influence the various stakeholders and banks' performance? Therefore, a better understanding and knowledge of all the factors affecting the bank's performance is very significant for management to meet the expectations of all stakeholders. This study intended to examine the degree of relevance of these factors with bank performance in the Asia-Pacific region. This study evaluated the bank performance by considering CAELs, ESG, institutional and market-related factors using panel data estimation techniques and quantile regression to analyze and examine the problem statement.



**Figure- 1.4. Stakeholders Interests in Bank Performance**

## **1.5. Research Question(s)**

### **1.5.1. General Question (s)**

The study addressed the main research question (s); “What is the impact of bank-specific/CAELs, governance, market structure, institutional and environmental factors on bank efficiency and profitability?”

### **1.5.2. Specific Question (s)**

Specifically, the study posited the following research question(s):

1. What is the impact of bank-specific factors on efficiency and profitability?
  - a) How the asset quality affects banks' efficiency and profitability?
  - b) How does liquidity affect bank efficiency and profitability?
  - c) Does the capital ratio influence the bank's efficiency and profitability?
  - d) How does size influence bank efficiency and profitability?
2. What impact does corporate governance explain the bank's efficiency and profitability?
  - a) How does the board size influence the bank's efficiency and profitability?
  - b) What is the influence of CEO duality on bank efficiency and profitability?
  - c) What is the impact of gender diversity on banks' efficiency and profitability?
  - d) Does the ownership structure influence the bank's efficiency and profitability?
3. What is the impact of the environmental factors on bank efficiency and profitability?
  - a) How does the corporate social responsibility disclosure index influence the bank's efficiency and profitability?
4. How do market-structure factors (concentration) influence bank efficiency and profitability?
5. What is the role of institutional factors in explaining bank efficiency and profitability?
  - a) How does the economic freedom index impact the efficiency and profitability of banks?
  - b) How does the global competitiveness index influence bank efficiency and profitability?
6. How does financial reporting quality moderate the relationship between dependent and independent variables?
  - a) How does financial reporting quality moderate the relationship between corporate governance and bank efficiency and profitability?
  - b) What is the role of financial reporting quality in moderating the relationship between corporate social responsibility disclosure on bank efficiency and profitability?



## **1.6. Research Objective (s)**

### **1.6.1. General Objective (s)**

The primary objective of the study is: “To investigate the impact of bank-specific factors/CAELs, governance, market structure, institutional and environmental factors on banks' efficiency and profitability in the Asia-Pacific region.”

### **1.6.2. Specific Objective (s)**

Specifically, the study has the following objectives:

1. To examine the impact of bank-specific factors on banks' efficiency and profitability
  - a. To investigate the influence of asset quality on bank efficiency and profitability
  - b. To study the impact of liquidity on bank efficiency and profitability
  - c. To assess the relationship between capital ratio and bank efficiency and profitability
  - d. To provide an insight about the effect of size on bank efficiency and profitability
2. To identify the influence of corporate governance on bank efficiency and profitability
  - a. To ascertain the impact of board size on bank efficiency and profitability
  - b. To examine the effect of CEO duality on bank efficiency and profitability
  - c. To elucidate the impact of gender diversity on bank efficiency and profitability
  - d. To determine the role of ownership structure affecting the bank's efficiency and profitability
3. To assess the influence of environmental factors on banks' efficiency and profitability
  - a. To identify the role of the corporate social responsibility disclosure index in explaining the bank efficiency and profitability
4. To investigate the relationship of market structure factor (concentration ratio) with banks' efficiency and profitability
5. To determine the impact of institutional factors on banks' efficiency and profitability
  - a. To assess the effects of the economic freedom index on bank efficiency and profitability
  - b. To find out the influence of the global competitiveness index on bank efficiency and profitability
6. To investigate the moderating effect of financial reporting quality
  - a. To assess the moderating role of financial reporting quality on corporate governance and bank efficiency and profitability

- b. To determine the moderating impact of financial reporting quality on the corporate social responsibility disclosure index and bank efficiency and profitability

### **1.7. Scope of the Study**

Primarily, this study evaluated the bank performance by considering the bank-related, corporate governance, concentration ratio, institutional and environmental factors by taking data of the 175 commercial banks from the ten countries of the Asia-Pacific region for the period 2013-2018 besides investigating the moderating effect of financial reporting quality. This study uses return on assets and technical efficiency to measure the bank performance (Batir et al., 2017; Hasanul et al., 2017 in Bangladesh; Mravlja, 2017; Zheng, Rahman, Begum, & Ashraf, 2017). This study used panel estimation techniques, GMM, and Quantile regression.

The Asia-Pacific region is selected as it is the most populous and rapid growth area globally, with economic growth of 8.04% compared to world GDP growth of 2.5%. The analysis indicated that five out of the ten most populous and emerging economies were placed in 2017 (Key Indicators for Asia and Pacific Region, 2018). Moreover, the Asia-Pacific region is the most populous with 4100 million people and rapid economic growth of 6.1 % compared to the other regions of the world (Economic Freedom Index by Heritage Foundation, 2017). Hence, the sample of 10 chosen economies is selected from the region such as Pakistan, Bangladesh, India, Indonesia, China, Malaysia, Thailand, Australia, Singapore, and Japan.

The developing country like Pakistan has been selected as it is one of the most densely populated areas in South Asia and faces numerous challenges. It is plagued with weak institutional and regulatory frameworks, poor accountability processes or mechanism, judicial system is flawed by prevalent issues. These issues include dishonesty, threats, large backlog of cases, long delays in the court decisions on corruption cases, the politicians/bureaucrats are facing serious allegations of bribery, extortion, cronyism, nepotism, graft, and embezzlement, excessive state or politicians interference in financial sector, capital markets are undermined, male dominance society, no mandatory laws for gender diversity etc (Economic Freedom Index, 2019). The above factors motivate us to conduct a comprehensive empirical research in the banking sector to understand that how these factors influence the bank performance in the context of emerging economy like Pakistan.

## 1.8. Potential Contribution

The study findings are important to all stakeholders. They will gain theoretical and practical experience on the effect of corporate governance, market structure, and regulatory, institutional and environmental factors that significantly influence the banking sector performance.

1. This study contributes to the information asymmetry theory and financial intermediation theory by explaining how imperfect information, transaction cost, and regulation affects financial intermediaries' health, their capacity for providing loans/credit, and techniques to recover bad debts. The imperfect information creates the issue of moral hazard, adverse selection of borrowers, earning manipulation to attract the prospective investors/creditors, to avoid from paying taxes, to meet the regulatory requirements imposed by monetary authorities, etc. The financial intermediaries resolved these issues by developing better information system, sharing more disclosures, better technology, and adhere with regulatory policies regarding capitalization, asset-liability management, liquidity management, green financing etc.
2. This study contributes to information asymmetry theory, corporate governance theories, and gender diversity theories by explaining that how asymmetric information between principal and agent, an ineffective board (lack of KSA to make informed decision, promote nepotism, corruption, ineffective monitoring and supervision, communication obstacles, free riders, etc.), diversity, remuneration, stakeholder accountability, transparency, agency cost (unaligned goals), leadership structure, conflicts of interest, etc., affects the interests of various stakeholders and firm objectives. The issues can be resolved by hiring the professional/qualified board members, more female representation on board, by offering competitive packages/other incentives (share ownership, stock options, a dismal threat, etc.,) ensuring effective managerial monitoring and supervision, strong accountability mechanisms, more disclosures, etc.
3. This study contributes contextually by investigating the impact of multiple factors on bank performance in a different study setting to assess the degree of relevance to each factor.

4. The findings of the study have a greater implications for various stakeholders as it helps them to understand that how CAELs, governance, market, institutional and environmental factors influence the bank's performance. Specifically, it helps the policymakers to understand that how the demographic dynamics, policies regarding assets financing structure, capitalization levels, borrowers selection, earning manipulations (to avoid from paying taxes, to presents the accounts more lucrative to investors, to increase CEO/directors remuneration, etc), governance, gender diversity, disclosure protocols, up to what extent the banks are involved in social investment (food, education, health, and shelter), poverty reduction, sustainable green financing, charities, etc. affecting bank performance and formulate their policies accordingly.

### **1.9. Organization of the study**

The study is arranged as follows: Chapter one entails the background of the study, theoretical knowledge, gap analysis, problem statement, research questions and objectives, and potential contribution. The second chapter of this thesis is for a literature review providing theoretical foundations, empirical findings, and hypotheses development. The third chapter provides information about the justification for selection of regions, countries and banks (population and sample size), data mining, data collection procedure, methodology, model specification, and estimation techniques. The empirical findings/results and discussions are elaborated in Chapter 4. Finally, the conclusion, study implications, limitations and future recommendations are well-documented in the Chapter 5.

## CHAPTER 02

### 2. Literature Review and Hypotheses Development

This section includes the historical debate or the review of literature by various researchers to determine the factors affecting bank performance. Section 2.1 consists of the literature on the proxies used to measure the bank performance and justification. Section 2.2 to Section 2.6 provides a critical examination of the literature on the explained variables used in the study. Then, the moderating effect of the financial reporting quality is discussed in Section 2.7. Lastly, Section 2.8 and Section 2.9 discuss the control variables and theoretical framework.

Each Section from Section 2.2 to Section 2.6 comprises three paragraphs. The first paragraph describes the variables; however, the theoretical support and nature of the direction of the relationship of the variables with bank efficiency and profitability are explained in the second and third paragraphs, respectively. At the end of the third paragraph, the literature is concluded by developing the hypothesis. This study gathers empirical literature to examine the impact of bank-specific, governance, marketstructure, institutional and environmental factors influencing bank performance.

#### 2.1. Bank Performance

The performance of the banking sector is the main concern for the various stakeholders as they can take their decisions accordingly (Herdjiono & Sari, 2017 in Indonesia; Kusi, Gyeke-Dako, Agbloyor & Darku, 2018). For example, depositors are adversely affected as the banks cannot meet their obligations by paying back the money. Similarly, borrowers are badly affected as they do not get more loans from banks that hamper the economic or investment activities in the country. Moreover, shareholders are also affected as they want to get maximum return on their investment and ensure that their money is not stolen or wasted. Hence, they can lose their capital in such circumstances. Furthermore, employees, managers, and directors are also adversely affected as they feel insecure about their jobs and remuneration. The communities/societies are adversely affected as banks cannot provide loans for philanthropic activities such as education, health, arts and culture, women empowerment, poverty alleviation, gender discrimination, disaster management, etc. The financial position of the banking sector also adversely affects the government in two ways; (i) non-availability of capital to meet the deficit budget and to start the developmental budget (ii) government revenues (tax received from the bank) is also decreased. The banks may also be affected as politicians writeoff their loans from commercial banks. The central bank is the sole authority in

the country to control the money supply, inflation, promote employment, maintain the exchange rate and economic stability in the country. The central bank adopts a tight or lenient monetary policy in light of the performances of commercial banks.

The previous studies used various proxies to measure bank performance such as accounting or profitability measures (ROA, ROE, etc.), market measures (EPS, market to book value ratio, Tobin Q, etc.), economic measures (economic value added), and efficiency measures (parametric and non-parametric approaches). This study used return on assets (ROA) and technical efficiency (TE) to measure the bank performance. ROA indicates how the firm utilizes its assets to generate income. Further, it does not reflect a bank's current market value and value-maximizing behaviour. The scholars who used ROA to measure bank performance include Bourke (1989) in Europe, Athanasoglou et al. (2006) in Europe, Zulkafli and Samad (2007) in Asian Countries, Syafri (2012) in Indonesia, Wasiuzzaman and Gunasegavan (2013) in Malaysia, Yasir et al. (2014) in Pakistan, Niklas and Rasmus (2016), Zheng et al. (2017), Herdjiono and Sari (2017) in Indonesia, Nadeem et al. (2017) in Australia, Mravlja (2017), Gangi et al. (2018), and Riyadh et al. (2019). The other approach used in this study to measure bank performance is efficiency. The two ways employed to measure efficiency are parametric and non-parametric (Berger & Humphrey, 1997). Researchers prefer the non-parametric approach of efficiency computation over others because it does not need prior assumptions such as (i) non-estimation of regression parameters; (ii) no need to differentiate between exogenous and endogenous variables or error term; (iii) no endogeneity issues to handle unlike other parametric approaches; (iv) no requirement of a specific functional form; (v) processing multiple outputs and multiple inputs simultaneously. However, this does not mean that DEA is free of drawbacks. The outlier's most significant issue is that it cannot be detected by conducting diagnostic tests on residuals (ii) It ignores the random errors (measurement errors, good or bad luck) and considers all deviations from the frontier as inefficient. Ultimately, this will overstate the inefficiency if noise is present (iii) A strong correlation exists between inputs and outputs in the first stage of DEA. Finally, the results obtained by regressing the explanatory variables with efficiency scores in the second stage are biased.

Efficiency demonstrates that how company uses its scarce resources to maximize output. It is ratio of weighted sum of outputs to weighted sum of inputs. Its value lies between 0 to 1. The three types of efficiencies are commonly used in the literature such as technical (TE), pure (PTE), and scale (SE). Technical efficiency means how better the company translates its resources (inputs) into the final product (output) with current technology. Pure technical efficiency refers to administrative

and managerial capabilities. Lastly, scale efficiency is linked to economies or diseconomies of scale. SE is the ratio of TE at Constant Return to Scale (CRS) and TE at Variable Return to Scale (VRS).

Data envelopment analysis (DEA), a non-parametric technique, deals with multiple inputs and outputs in a single model as said by Farrell (1957), Charnes, Cooper, and Rhodes (1978), and Banker, Charnes, and Cooper (1984). In other words, DEA is a model that examines the relative efficiency of a number of similar/same units. These units are called decision-making units (DMUs) that carry out the same activities to make the comparisons. Farrell (1957) originally developed this technique based on several inputs and single output to evaluate the efficiency of homogenous units. Later on, Charnes et al. (1978) presented a CCR model that worked with multiple inputs and outputs but is based on a constant return to scale known as technical/overall efficiency. This model is effective when the companies operate at the best possible level (Henriquesa et al., 2018, Majeed & Zanib, 2016). Furthermore, Banker et al. (1984) suggested the BCC model that also worked with multiple inputs and outputs, but is based on a variable return to a scale called pure technical efficiency, i.e., based on administrative capacity alone (Yilmaz & Gunes, 2015; Coelli, 1996). This model is applied to those firms that are not functioning at the maximum level due to imperfect markets, technological innovations, prudential regulatory changes, and monetary restrictions (Barry et al., 2008; Sufian et al., 2016; Hasanul et al., 2017). Sherman and Gold (1985) first applied this technique to the banking sector. In the Asia-Pacific region, this technique was employed to examine the banking sector's efficiency (Sathye, 2005). They used two frontiers to compare the efficiency, i.e., at the national and regional levels. In the second stage, they regressed the independent variables with efficiency scores. The scholars who used DEA to measure bank efficiency include Grigorian and Manole (2002), Casu and Molyneux (2003) in Europe, Sathye (2005) in Asia-Pacific region, Percin and Ayan (2006) in Turkey, Havrylchuk (2006) in Poland, Pasiouras (2008), Naceur et al. (2009) in MENA, Sufian and Habibullah (2010) in Thailand, Chan and Heang (2010) in Malaysia, Ardianty and Viverita (2011) in Indonesia, Dipasha et al. (2013) in Indian banks, Ismail, Majid and Rossazana (2013) in Malaysia, Raphael (2013) in Tanzania, Rosman et al. (2014) in MENA, Barth et al. (2013), Saha et al. (2015) in Malaysia, Iveta (2015) in Czech Republic, Islam and Kassim (2015) in Bangladesh, Dharmendra and Bashir (2015) in Oman, Shawtari et al. (2015) in Yemen, Sufian et al. (2016) in Malaysia, Soba et al. (2016) in Turkey, Chan and Karim (2016) in East Asian Countries, Majid and Zanib (2016) in Pakistan, Alharthi (2016), Abbas et al. (2016) in Pakistan, Hossian, Sobhan and Sultana (2016), Batir et al. (2017), Hasanul et al. (2017) in Bangladesh, Alqahtani, Mayes and Brown (2017) in GCC, Abdul-Hamid et al. (2017) in Qatar, Henriques,

Sobreiro, Kimura and Marianob (2018) in Brazil, Yonnedi and Panjaitan (2019) in Indonesia, and Belasri et al. (2019).

DEA model can be input orientated or output orientated. It is difficult to conclude which orientation is better for examining the performance of financial institutions. The selection of orientation shed limited impact on the efficiency scores obtained. Its decision for selection depends upon the quantities (inputs or outputs) on which the managers have the most control (Coelli, 1996). The input-orientated model intends to decrease input levels to the minimum, keeping output constant, while the output-orientated model wants to enhance outputs, keeping the input levels constant (Batista, 2009). Casu and Molyneux (2003), Barry et al. (2008), Sufian and Habibullah (2010) in Thailand; Sufian et al. (2016), Majeed and Zanib (2016), Batir et al. (2017), Hasanul et al. (2017), Henriquesa et al. (2018) used input-orientated approach by assuming that banks deliberately focus on decreasing costs. Ardianty and Viverita (2011) used DEA input-orientated model with VRS to determine the efficiency in the context of Indonesian banks. Alqahtani et al. (2017) used DEA (two-stage) with CRS of input orientated model to measure the efficiency of banks in GCC. Hossian, Sobhan, and Sultana (2016) used DEA having both input and output orientation with VRS in Bangladeshi commercial banks.

The main challenge in DEA is deciding the appropriate selection of input and output variables. Berger and Humphrey (1997) used the intermediation and production approach to select the variables. The former is better when the objective is to assess the performance of overall firms. The latter is suitable when the purpose is to evaluate the performance of bank branches, opening accounts, check clearing, reports, and others. They prefer the intermediation approach over other approaches as it inculcates interest expenses that contribute more than fifty percent of the total costs. Two motives for applying this approach are (i) the banks act as an intermediary to accept deposits and lend them for the investments (ii) and applying it to assess the efficiency of the entire bank.

## **2.2. Bank Specific Factors**

These factors are under the control of management. The information asymmetry supports the association between bank-specific factors and performance. It states that the imbalance of information between banks and other stakeholders creates problems in decision making. In this perspective, four proxies are used: asset quality, liquidity, capital adequacy ratio, and size of the bank. The scholars used bank-specific factors to determine the profitability of banks include Berger and DeYoung (1997), Athanasoglou et al. (2008), Ghosh (2017), Bitar, Pukthuanthong, and Walker (2018), Yao et al.(2018), Phan et al.(2018), and Aziz and Knutsen (2019).



### 2.2.1. Asset Quality and Bank Performance

Asset quality refers to the risk associated with the various assets held by financial institutions. Non-performing loans (NPLs) to total loans, are used to measure the quality of the assets. NPLs are related to bad debts and facing the risk that arose from default or failure of borrowers to meet their payment obligations (Athanasoglou et al., 2008; Berger & DeYoung, 1997 in the US; Ghosh, 2017; Yao et al., 2018; Aziz & Knutsen, 2019).

Berger and DeYoung (1997) tested the following hypotheses in US banks surrounding the relationship between NPLs and efficiencies i.e. bad management hypothesis, bad luck hypothesis, and skimming hypothesis. They tested the bad management hypothesis and found a negative relationship of NPLs with banks' efficiency. They said that non-performing loans increase as a result of inefficient management. They assumed that in such circumstances, the management is considered inadequate due to the wrong choice of client, incompetent in assessing the value of collateral for the loans, and ineffective while monitoring the borrowers. Similarly, they found an inverse association of NPLs with efficiency in the bad luck hypothesis. They said that unexpected external events or macro-economic factors badly affected the asset quality of loans. Therefore, the bank spends much more resources to handle or control the worse situation to avoid toxic loans that increase the operational cost and undermine bank efficiency. Contrary to the above arguments, they observed a positive association of NPLs with efficiency in the short run in the skimming hypothesis. The underlying idea is that a bank can maximize its profits by lowering its operating expenses in the short run by skimming on the resources dedicated to underwriting and monitoring loans. Williams (2004) observed a negative relationship of asset quality with efficiency in European banks. The results are consistent with the findings of the bad management hypothesis. Using the same proxy and methodology for asset quality, Rossi, Schwaiger, and Winkler (2005) contend that asset quality adversely influence the cost-efficiency. The results are aligned with the bad luck hypothesis. Banker, Chang, and Lee (2010) found negative relationship of non-performing loans with efficiency in Korea. Sufian and Habibullah (2010) found a significant and negative association between credit risk (LLP to total loans) and bank efficiency in the context of Thailand. Raphael (2013) argued that credit risk (NPL to total loans) insignificantly and positively influences efficiency. Shawtari, Ariff, and Hamzah (2015) found an insignificant negative relationship between credit risk (LLP/TL) and efficiency in Yemen. Phung, Cheng, and Kao (2018) revealed that non-performing loans (NPLs) significantly improve banks' cost efficiency in China and Vietnam. The literature supports the negative association of non-performing loans with bank efficiency (Batir et al., 2017; Havrylchyk,

2006; Saha, Ahmad, and Dash, 2015). Contrary to the above, Iveta (2015) found a positive relationship of credit risk with bank efficiency by using CCR and BCC models. Tan and Floros (2013) suggested a positive relationship between credit risk (LLP/TL) and efficiency in China. Chan and Heang (2010) found an insignificant positive impact of NPL with cost efficiency, whereas an insignificant negative relationship was found with profit efficiency in Malaysia. However, the studies of Sufian, Kamarudin, and Nassir (2016) argued that credit risk (LLP to total loans) insignificantly influences bank efficiency in Malaysia.

Kassim (2002) states that NPLs exist due to several reasons such as bad management, vague credit policies, insufficient credit analysis, deficiencies in loan documentation, corrupt practices, financial gloominess, discrepancies in policies and regulations, political flux, and interference in writing off loans. Balasubramaniam (2013) explained the reasons how NPLs affect bank profitability. He said that the existence of NPLs stuck the bank's income as it does not earn any income on NPLs and may also lose its assets. This compels the banks to spend additional costs on hiring additional employees to recover such loans from defaulters. It further forces banks to take additional loans from other sources at higher interest rates that tarnish the bank's image. Thus, due to the existence of NPLs, the banks may face default risk and reputational risk that hampers their credit rating and discourages the investor confidence in the banking system from making reasonable investments. Athanasoglou et al. (2006) and Athanasoglou et al. (2008) revealed a negative but significant relationship between credit risk (loan loss provision) and bank profitability. Davydenko (2010) indicates that NPLs shed a significant and negative influence on the profitability in Ukraine. Sufian and Habibullah (2010) reported that credit risk (LLP/TL) influences ROA negatively and significantly in Malaysia. However, they found an insignificant and positive relationship of LLP to total loans with ROA in Indonesian banks. Wu and Shen (2013) revealed a negative relationship of non-performing loans with ROA. Raza, Jawaid, and Shafqat (2013) argued that credit risk negatively influences profitability in Pakistan. Shahabadi and Samari (2013) reported that asset quality (NPLs) negatively impacts the banks' profitability in developed countries; however, it positively affects banks' profitability in developing countries. The studies of Ayanda, Christopher and Mudashiru (2013) in Nigeria and Wasiuzzaman and Gunasegavan (2013) in Malaysia observed an inverse relationship of credit risk (LLP/LLR) with bank profitability. Nisar, Susheng, Ahmed and Ke (2015) found a negative relation of NPLs with profitability in Pakistan. Islam and Nishiyama (2016) found a negative and insignificant relationship between NPL and ROA in South Asian Countries. Djalilov and Piesse (2016) found a negative relation of non-performing loans with profitability in eight

transition countries by applying the GMM method. Menicucci and Paolucci (2016) demonstrated that asset quality decreases the EU's bank profitability. The scholars such as Ghosh (2017) in India, Salike and Ao (2017) in Asian banks, and Kusi et al. (2018) documented that NPLs significantly declines banks profitability. Yao et al. (2018) observed that credit risk significantly affects the ROA. They found an inverse relationship of credit risk (LLPs) with ROA. Andries, Capraru, and Nistor (2018) found an insignificant and negative relationship of NPLs with profitability. Aziz and Knutsen (2019) found a negative relation of credit risk with profitability in Arab countries. Contrary to this, Akhtar, Ali, and Sadaqat (2011), Olweny and Shipho (2011) in Kenya, Syafri (2012) in Indonesia and Khan, Ijaz, and Aslam (2014) in Pakistan reported a significant and positive relationship between NPLs and ROA. Abduh and Idrees (2013) found an insignificant and positive impact of LLR with ROA in Malaysia.

The mixed result obtained through the above studies suggests further investigation by investigating the relationship between asset quality and bank performance in the Asia-Pacific region. This debate guides to the following hypothesis:

H0: There is a significant relationship between asset quality (non-performing loans) and banks' efficiency

H0: There is a significant relationship between asset quality (non-performing loans) and banks' profitability

### **2.2.2. Liquidity and Bank Performance**

Asset and Liability management is considered to be significant factors influencing the performance of banks. The liquidity risk refers to the bank's inability to meet its obligations to the depositors. The default risk arises when the borrowers are unable to return the loaned amount. Two proxies such as deposits to assets and loans to assets are used to measure of liquidity (Batir et al., 2017; Goddard, Liu, Molyneux, & Wilson, 2013; Phan et al., 2018; Rossi, Schwaiger, & Winkler, 2005; Sufian & Habibullah, 2010 in Malaysia; Syafri, 2012 in Indonesia).

Batir et al. (2017) observed a direct association of liquidity (deposits and loans) with efficiency in the banks of Turkey. Contrary to this, Phan et al. (2018) revealed a negative impact of liquidity risk (deposits to total assets) on the efficiency in the Asia-Pacific region. They claimed that maintaining/holding more liquidity decreases the bank's efficiency.

Gul, Irshad, and Zaman (2011) in Pakistan and Muda, Uddin, and Embaya (2013) in Malaysia found that liquidity (deposits and total loans) significantly enhances the profitability. The

scholars that observed a negative association of deposits with profitability include Khan, Ijaz, and Aslam (2014) in Pakistan, Saeed (2014) in the UK, Menicucci and Paolucci (2016) in EU banks, Mumtaz and Sajjad (2017) in Pakistan, Hasanov, Bayramli, and Al-Musehel (2018) and Rodney and Jing (2018). They claimed that if deposits are long term, then enhance the profitability and show a positive relationship and if deposits are short term, it will be unable to generate profit.

Rossi et al. (2005) found positive relationship of loans to total assets with cost-efficiency. Aysan and Ceyhan (2008) reported that liquidity (loans to total assets) positively influences banks' efficiency in Turkey. Chortareas et al. (2013) contended a significant and direct association of liquidity (loans/total assets) with efficiency in EU banks. Raphael (2013) in Tanzania, Iveta (2015) and Shawtari, Ariff and Hamzah (2015) in Yemen, Saha, Ahmad, and Dash (2015) in Malaysia, Dharmendra and Bashir (2015) and Abbas, Azid and Besar (2016) found that liquidity (loans/total assets) positively and significantly influences the bank's efficiency. Contrary to this, Havrylchyk (2006), Akmal and Saleem (2008) in Pakistani banks and Tan and Floros (2013) in Chinese banks demonstrated that liquidity (loans to total assets) adversely influence the efficiency. Phan, Daly, and Akhter (2016) found a negative relationship of liquidity with SFA in Asian countries. Naceur, Ben-Khedhiri and Casu (2009), Sufian and Habibullah (2010) in Thailand and Sufian, Kamarudin, and Nassir (2016) in Malaysia found an insignificant and negative relationship between loans to total assets and bank efficiency in MENA.

Bourke (1989) used international data from 1972 to 1981 and found that liquidity (loans to total assets) directly influences ROA. Naceur and Omran (2010) argued that loans are significantly and positively associated with profitability in MENA when only the bank-specific factors are evaluated, but when considering the macro-economics and financial development variables, this significance tends to disappear. The scholars such as Ani, Ugwunta, Ezeudu, and Ugwuanyi (2012) in Nigeria, Syafri (2012) in Indonesia, Saeed (2014) in the UK, Talaso (2015), Menicucci and Paolucci (2016) in EU banks and Tan (2016) in China found a significant and positive relationship of liquidity (loans to total assets) with ROA. Moreover, Hasanov, Bayramli, and Al-Musehel (2018) found that loans positively influence the ROA. They argued that more lending implies more generation of interest revenue if banks can effectively monitor and manage credit risks. Contrary to the above arguments, Davydenko (2010), Raza et al. (2013) in Pakistan, Nisar et al. (2015) in Pakistan, Belhaj and Mateus (2016) in Europe, and Islam & Nishiyama (2016) in South Asian Countries contended a significant and negative association of liquidity with profitability. They presented a counter-argument that a high-value ratio implies more lending that faces a higher risk of

bankruptcy, enhances financing costs, and shrinks banks' ROA (Goddard et al., 2013). Athanasoglou et al. (2006), Sufian and Habibullah (2010), Wasiuzzaman and Gunasegavan (2013) in Malaysia, Muda, Uddin, and Embaya (2013), Ayanda et al. (2013) in Nigeria, Abduh and Idrees (2013) and Yao et al. (2018) in Pakistan demonstrated an insignificant but positive influence of liquidity (loans to total assets) on profitability in Malaysia. The mixed result suggests further investigation by assessing the influence of liquidity on the banks' performance in the Asia-Pacific region. This argument brings us to the following supposition:

H0: There is a significant relationship between liquidity (deposits and loans) and banks' efficiency.

H0: There is a significant relationship between liquidity (deposits and loans) and banks' profitability.

### 2.2.3. Capitalization and Bank Performance

Capitalization depicts banks' financial strength or ability to absorb captivated shocks or losses or unanticipated losses. The proxy used for the capital ratio is shareholders' equity to total assets. The three hypotheses explaining capitalization's relationship with profitability include signalling, bankruptcy, and risk-return hypotheses. The signalling theory and bankruptcy hypothesis posit that capitalization positively influence the profitability. Signalling theory asserts that holding higher capital positively signals to depositors, investors, government, regulatory authorities, and credit rating agencies about the quality of bank asset structure and its prospects. Similarly, the bankruptcy hypothesis implies that a bank maintains equity to protect itself from the bad times or the period of misery or mitigate the risks faced by depositors (Berger, 1995; Trujillo-Ponce, 2012). Contrary to this argument, the risk-return hypothesis reveals a negative relation of capital with performance. This hypothesis implies that if a bank expects higher returns, it may take more risk. As a result, the capital ratio (equity to asset) will be reduced (Dietrich & Wanzenrid, 2011).

Grigorian and Manole (2002), Rossi et al. (2005), Yildirim and Philippatos (2007) in Europe, Aysan and Ceyhan (2008), Akmal and Saleem (2008) in Pakistan, Naceur et al. (2009) in MENA, Banker, Chang, and Lee (2010) in Korea, Sufian and Habibullah (2010) in Thailand, Garza-Garcia (2012) in Mexico, Raphael (2013) in Tanzania, Chortareas et al. (2013), Rosman, Abd Wahab, and Zainol (2014) in MENA, Dharmendra and Bashir (2015) in Oman, Saha, Ahmad, and Dash (2015) in Malaysia and Sufian et al. (2016) in Malaysia demonstrated that capitalization significantly and positively influences the banks' efficiency. Iveta (2015) found a positive impact of capitalization on

efficiency when applied CCR model; however, an inverse relationship capital ratio with banks' efficiency as in case of the BCC model. Soba, Erem, and Ceylan (2016) in Turkey and Phan et al. (2018) in East Asia and the Pacific region found that capitalization significantly and positively influences efficiency. They argued that capital requirements are an effective tool to promote financial stability and ultimately increase bank performance. The scholars found a positive relationship of capital ratio with efficiency (Barth, Lin, Ma, Seade & Song, 2013; Abbas et al., 2016 in Pakistan; Hasanul, Rubi, & Eric, 2017 in Bangladesh). Conversely, Shawtari et al. (2015) in Yemen, Lin, Doan, and Doong (2016), Batir et al. (2017) in Turkey, and Bitar, Pukthuanthong, and Walker (2018) demonstrated that capitalization significantly influences efficiency. Phung et al. (2018) noted that capital ratio adversely affects bank cost efficiency. However, the studies of Tanna, Pasiouras, and Nnadi (2011) found an insignificant and negative relationship of CAR with efficiency. Chan and Heang (2010) found an insignificant positive effect of capitalization on Malaysia's cost and profit efficiency.

Bourke (1989) found that capital ratio is positively linked with banks' profitability. He said that banks that diversify their capital well face less risk and earn more profit. Berger (1995) contends that the well-capitalized banks handle the risk properly, leading to increase the profitability. Athanasoglou et al. (2006) and Athanasoglou et al. (2008) suggested a positive relationship of capitalization with profitability due to many reasons such as (a) Optimum utilization or diversification of capital lessens the chances of bankruptcy and translated this benefit into better profitability; (b) lower their funding cost due to higher creditworthiness; (c) Engaging in prudent lending; (d) Reducing the borrowing of the bank that decreases the cost of capital and ultimately increases profitability (e) Ability to absorb external shocks. Shahabadi and Samari (2013) indicated a positive relation of capitalization with profitability in developed countries; however, negative relations have been observed in developing countries. Tan (2016) argued that the better-capitalized banks shed positive signals to the stakeholders, improved reputation and credit ratings, indulged in efficient lending, and involved in less borrowing. These factors intended to increase the bank's profitability. Aziz and Knutsen (2019) found that capitalization positively and significantly influences bank profitability. The studies of Pasiouras (2008), Naceur & Kandil (2009), Sufian and Habibullah (2010) in Malaysia and Indonesia, Davydenko (2010) in Ukraine, Naceur and Omran (2010) in MENA, Olweny and Shipho (2011) in Kenya, Ani et al. (2012) in Nigeria, Syafri (2012) in Indonesia, Wasiuzzaman and Gunasegavan (2013) in Malaysia, Raza et al. (2013) in Pakistan, Khan et al. (2014) in Pakistan, Saeed (2014) in UK, Nisar et al. (2015) in Pakistan, Talaso (2015) in Kenya, Islam and Nishiyama (2016) in South Asian Countries, Belhaj and Mateus (2016) in Europe,

Djalilov and Piesse (2016), Niklas and Rasmus (2016) in advanced and emerging economies, Menicucci and Paolucci (2016) in EU banks, Mumtaz and Sajjad (2017) in Pakistan, Ghosh (2017) in India, Salike and Ao (2017) in Asian banks, Gitau, Anyango, and Rotich (2017) in Kenya, Andries et al. (2018), Kusi et al. (2018) and Yao et al. (2018) in Pakistan argued that capitalization significantly enhances the banks profitability. Contrary to the above, Akhtar et al. (2011) found a significant but negative relation of capitalization with ROA in Pakistan. Similarly, Goddard et al. (2013) conducted research in EU countries and found an inverse association between capitalization and return on assets. They justified that due to less riskiness, these banks exhibited lower returns. Similarly, Zheng et al. (2017) in Bangladesh and Bitar et al. (2018) in OECD countries found that well-capitalized banks deteriorated the profitability. Furthermore, Mensi and Zouari (2010) and Ayanda et al. (2013) in Nigeria found an insignificant but positive, whereas, Gul, Irshad, and Zaman (2011) in Pakistan and Abduh and Idrees (2013) reported an insignificant but inverse relation of capitalization with profitability. The debate leads us to the following hypothesis:

H0: There is a significant relationship between capitalization and bank efficiency.

H0: There is a significant relationship between capitalization and banks profitability.

#### **2.2.4. Size of Bank and Performance**

It is measured by the natural logarithm of total assets. Three different opinions are prevailing in the literature regarding the size of a bank and its impact on performance. The supporters who claimed that there exists a positive relationship of bank size with performance provides justification that bigger banks reap the benefits of economies of scale, more market power, ease of obtaining equity at shorter notice, raised debt at lower cost, broader asset diversification, efficient intermediation, effective monitoring and supervision, and better risk management. All these factors imply that a bank exposes less volatile earnings, reduces default risk, and increases bank performance (Hasanul et al., 2017). Similarly, the opponents argued that larger banks may lessen profits due to diseconomies of scale, mismanagement, bureaucratic issues, and engagement in more risky investments. This is because of too big to fail paradigm (Goldberg and Rai, 1996; Davydenko, 2010; Batir et al., 2017). The Kuznets inverted U-curve theory postulates that the profitability directly linked with the expansion in the bank size at a certain level; after that, it begins to fall even with the extreme increase in bank size. This is similar to the business cycle and product life cycle (Eichengreen & Gibson, 2001; Athanasoglou et al., 2008).

Drake and Hall (2003) in Japan, Rossi et al. (2005), Havrylchyk (2006) in Poland, Yildirim and Philippatos (2007) in Europe, Pasiouras (2008) by using international data, argued that larger banks diversified their loan portfolio risk more efficiently. This is because of the economies of scale, easily penetrate the market and the cost of doing and managing a business is very low. Akmal and Saleem (2008) found a direct link between bank size and efficiency. This implies that bank size shed a significant and positive influence on efficiency statistically. The other scholars such as Tan and Floros (2013) in China, Barth et al. (2013), Chortareas et al. (2013), Raphael (2013) in Tanzania, Saha et al. (2015) in Malaysian banks; Abbas et al. (2016) in Pakistan, Sufian et al. (2016) in Malaysia, Soba et al. (2016), Hasanul et al. (2017) in Bangladeshi banks, Adeabah, Gyeke-Dako, and Andoh (2018) in Ghana noticed a significant and positive association of bank size with efficiency due to economies of scale. Contrary to the above findings, Goldberg and Rai (1996) in European banks, Sathye (2001), Isik and Hassan (2002), Sufian and Habibullah (2010) in Thailand, Shawtari et al. (2015) in Yemen, Lin et al. (2016), and Batir et al. (2017) revealed that bank size deteriorates efficiency due to diseconomies of scale, mismanagement and bureaucratic obstacles. However, Tanna et al. (2011) and Rosman et al. (2014) in MENA noted an insignificant and positive association between bank size and efficiency. Chan and Heang (2010) found an insignificant and positive impact of bank size on cost and profit efficiency in Malaysia. Conversely, Dharmendra and Bashir (2015) found that bank size has insignificantly but negatively influenced efficiency in Oman.

Athanasoglou et al. (2006) revealed that bank size directly and significantly influences profitability due to economies of scale and stewardship theory. The researchers such as Naceur and Kandil (2009) in Egypt, Sufian and Habibullah (2010) in Malaysia, Arouri, Hossain, and Muttakin (2011), Gul et al. (2011), Akhtar et al. (2011), Wasiuzzaman and Gunasegavan (2013), Abduh and Idrees (2013), Garcia-Meca et al. (2014), Saeed (2014) in UK, Talaso (2015) in Kenya, Djalilov and Piesse (2016) and Niklas and Rasmus (2016) found that bank size positively and significantly influences profitability. Using an unbalanced panel data of 35 commercial banks from 2009 to 2013 in European countries, Menicucci and Paolucci (2016) found that bank size significantly and positively influences ROA. Likewise, Mumtaz and Sajjad (2017) in Pakistan, Zheng et al. (2017), Gitau et al. (2017) in Kenya, and Kusi et al. (2018) documented that bank size significantly and positively influences ROA. Similarly, Hasanov et al. (2018), Tomislava, Ana, and Mirjana (2018), Yao et al. (2018) in Pakistan and Aziz and Knutsen (2019) in Arab Countries revealed a significant and positive association of bank size with ROA. Conversely, Bourke (1989) noticed an inverse relationship of bank size with ROA. Similarly, the scholars such as Sufian and Habibullah (2010) in



Indonesia, Syafri (2012) in Indonesia, Ani et al. (2012) in Nigeria, and Raza et al. (2013) in Pakistan, Tan (2016) in China, Belhaj and Mateus (2016) in Europe, and Doumpos, Hasan, and Pasiourasa (2017) observed that bank size deteriorates the profitability. Andries et al. (2018) found a negative and significant relationship of bank size with ROA. Aslam and Haron (2020) observed that bank size significantly deteriorates bank profits in OIC countries. Furthermore, Eichengreen and Gibson (2001) argued that the association of bank size with ROA is just like a product life cycle, business cycle, and laws of return. Initially, the expansion of the banks shed a positive impact on profitability upto a certain point beyond which further expansion will bring an adverse impact on profitability. This phenomenon is known as Kuznets inverted U-curve theory. Naceur and Omran (2010) in MENA, Ayanda et al. (2013) in Kenya, Khan et al. (2014), Kilic (2015) in Turkey and Islam and Nishiyama (2016) in South Asian Countries observed an insignificant relationship of bank size with ROA. The mixed results suggest further investigation by determining the influence of size on bank performance in the Asia-Pacific region. This discussion brings us to the following hypothesis:

H0: There is a significant relationship between bank size and efficiency.

H0: There is a significant relationship between bank size and profitability.

### **2.3. Corporate Governance**

Corporate governance has gained significant attention from policymakers and various other stakeholders after the international financial scandals. These financial crisis arises as a result of the bad governance, weak regulatory and supervisory frameworks, ineffective monitoring, the same persons holding the position of Chairman and Chief Executive Officer (duality), inadequate accounting and auditing standards, absence or weakness of the internal control systems, non-existence/functioning of the internal audit departments; same persons perform both audit and accounts function, fraudulent financial reporting/financial manipulations, non-compliance of international standards and national policies/regulations, non-segregation of duties and responsibilities, conflict of the interests, non-disclosures (Wahyudin and Solikhah, 2017). According to Shleifer and Vishny (1997), corporate governance is the way through which the shareholders (principal) want to get maximum return on their investments from managers or board of directors (agent). The main objective of the corporate governance is to protect the interest of the shareholders, control agency problems, encourage separation of ownership and control, and make managerial monitoring effective to attain the firm objectives and performance (Arora & Sharma, 2016; Mollah et al., 2017; Vafeas & Theodorou, 1998). Most scholars believed that a strong mechanism of corporate

governance enhances the performance of the banking sector (Detthamrong, Chancharat, & Vithessonthi, 2017; Farag, Mallin, & Ow-Yong, 2018). The theories that better explain the relationship between corporate governance and bank performance are agency theory, stewardship theory, and stakeholder theory. These theories explain the relationship between agents (managers/banks) and principals (shareholders/stakeholders). Agency theory addresses the agency problem that arises as a result of unaligned goals between managers and shareholders. This forces the managers to seek and maximize their utility by paying themselves high salaries, unjustly incurring elevated purchasing costs, hiring additional employees to reduce their workload or increase their power, etc. (Jensen & Meckling, 1976; Kiel & Nicholson, 2003). Furthermore, Agency theory posits that duality creates a conflict of interest that impedes the CEO from making the managerial monitoring effective. Conversely, the stewardship theory postulates that the managers act as trustworthy individuals and are fully empowered, so they deal with the matters of the company in a better way (Donaldson & Davis, 1991; Kiel & Nicholson, 2003). The theory supports the duality concept (the same person should be CEO and Chairman). It assumes that insiders have better knowledge, skills, and information about the organization than outsiders, which helps in better decision-making and makes managerial monitoring effective. They further argued that duality will facilitate strong and unified leadership and its role of monitoring. Although irrespective of these two viewpoints, the impact of corporate governance on firm performance can not be exaggerated. The dimensions of corporate governance, such as board size, CEO duality, gender diversity, and ownership structure, have gained a lot of attention as they influence the performance of firms (Ajili & Bouri, 2018; Aslam & Haron, 2020; Hasanul et al., 2017 in Bangladesh; Herdjiono & Sari, 2017 in Indonesia; Jayati & Subrata, 2018 in India; Noguera (2020); Riyadh, Sukoharsono & Alfaiza, 2019; Tomislava, Ana & Mirjana, 2018; Ullah, Fang, & Jebran (2020); Varnita, Niladri & Jamini, 2018).

### **2.3.1. Board Size and Bank Performance**

Board size is the cornerstone of corporate governance. In previous studies, mixed results have been observed while determining the relationship between board size and bank performance. The direction of the relationship may be negative, positive, or no-relationship (Issac, 2017; Adeabah et al., 2018; Merendino and Melville, 2019). There are two perspectives prevailing in the literature regarding board size. The supporters of finding a positive relationship of board size with bank performance contended that the board members are better in decision-making as the members possess diversity in academic qualifications, degrees, certifications, vast experience, more exposures, broad knowledge and information, and better skills. They further claimed that it might be possible that the

monitoring and advisory role becomes ineffective in smaller board in order to control the powerful managers (Andersson & Wallgren, 2018; Arora & Sharma, 2016; Farag et al., 2017; Issac, 2017; Riyadh et al., 2019). Conversely, several scholars (Green and Homroy, 2017; Conyon & He, 2017; Jayati & Subrata, 2018; Noguera, 2020) argue that larger board adversely affects bank performance due to following reasons such as lack of communication, more free-riders, increase agency costs, and members interests may be unaligned with firm objectives.

Tanna et al. (2011) investigated corporate governance's influence on efficiency in the UK. They found a direct link between board size and efficiency. Salim, Arjomandi, and Seufert (2016) determined the relationship of board size (BoDs) with efficiency in the Australian banks by taking a data from 1999 to 2013. They found that BoDs significantly enhances efficiency. Soba et al. (2016) observed a direct and significant relationship between BoDs and efficiency in Turkey. Adeabah et al. (2018) observed a significant and positive relationship of board size with efficiency in Ghana by taking a sample of 21 banks from 2009 to 2017. Conversely, Beate and Gro (2010) observed a negative association of board size with efficiency in Norway. Andries et al. (2018) argued that the corporate governance index adversely affects the bank efficiency in European countries. Chan and Heang (2010) and Maria and Sanchez (2010) investigated the relationship of board size, duality, and diversity with efficiency in Spain. They argued that board size sheds an insignificant and positive influence on efficiency. conversely, Nanka-Bruce (2011) found an insignificant and inverse association of board size with efficiency, by using the data of manufacturing firms in sixteen countries.

Kiel and Nicholson (2003) suggested a positive association of BoDs with Tobin Q in Australia. De Andres and Vallelado (2008), Sahin, Basfirinci, and Ozsalih (2011) in Turkey, and Garcia-Meca et al. (2014) showed a positive relation of board size with ROA. They argued that a larger board comprises versatile knowledge and expertise of members who can work and cooperate for the company's betterment. Likewise, Johl et al. (2015) in Malaysia, Arora and Sharma (2016) in India, Belhaj and Mateus (2016) in Europe, and Herdjiono and Sari (2017) in Indonesia argued that as larger boards possess more intellectual and diversified knowledge hence, they can improve the decision-making process, which ultimately enhances the bank's profitability. In France, a research was conducted to determine the relationship between corporate governance attributes and performance by Ahmadi, Nejia, and Bouri (2017). They demonstrated that board size significantly improves firm performance. The other scholars such as Farag et al. (2017), Issac (2017), Ghosh (2017) in India, Gordini and Rancati (2017) in Italy, Bennouri, Tawhid, Haithem, and Mehdi (2018),

Ionascu, Ionascu, Sacarin, and Minu (2018) in European markets, Kusi et al. (2018) and Andersson and Wallgren (2018) in Swedish companies found a significant and positive influence of board size with ROA. Merendino and Melville (2019) found a positive relationship of board size with bank performance in the listed firms of Italy. Aslam, Haron, and Ahmad (2019) found that board size significantly enhances the performance of the banking sector. Riyadh et al. (2019) conducted research to examine the influence of board size and diversity on ROA. They found a positive relation of board size with firm performance. By taking data from 129 Islamic banks from the organization of Islamic cooperation (OIC) countries from 2008-to 2017, Aslam and Haron (2020) found that board size significantly and positively influences profitability. Aruoriwos, Chijoke, Simisola, and Paschal (2020) found a significant and positive impact of board size on ROA. Contrary to the above arguments, Guest (2009) in the UK, Adnan, Htay, Rashid, and Meera (2011) in Malaysia, Ujunwa (2012) in Nigeria, Pathan and Faff (2013), Ajanthan, Balaputhiran, and Nimalathashan (2013) in Sri Lanka, Mollah and Zaman (2015) in Pakistan, Abdullah and Azhar (2015), Green and Homroy (2017), Conyon and He (2017), Varnita et al. (2018), Tomislava et al. (2018) in Croatia, and Jayati and Subrata (2018) in India observed that larger board deteriorates the firm performance. They claimed that there is less chance of uniformity of decision making and poor communication among the directors as in the larger board. Noguera (2020) and Ullah, Fang, and Jebran (2020) revealed that board size significantly and negatively influences firm value. Haris, Yao, Tariq, Javaid, and Ain (2019) observed an inverted U-shaped relationship between board size and ROA. This implies that performance initially increases, but profitability declines after reaching a certain level. Moreover, Zulkafli and Samad (2007) in nine Asian countries, Arouri et al. (2011), Wasiuzzaman and Gunasegavan (2013), Salim (2013), Liu, Wei, and Xie (2014), Kilic (2015) in Turkey, Mahmood and Malik (2018) in Pakistan, and Ajili and Bouri (2018) in GCC found an insignificant but positive relationship of board size with ROA. Conversely, Torchia, Calabro, and Huse (2011) and Arnaboldi, Casu, and Kalotychou (2018) find an insignificant and negative impact of board size on profitability. The mixed results suggest further investigation by assessing the impact of governance factors on profitability in the Asia-Pacific region. This discussion brings us to the following hypothesis:

H0: There is a significant relationship between board size and bank efficiency.

H0: There is a significant relationship between board size and banks' profitability.

### 2.3.2. CEO Duality and Bank Performance

It deals with the condition when the same person possesses the position of CEO and Chairman. There are two types of leadership structure in the firms i.e., single-tier and two-tier. A single-tier means one person can execute both the functions of the CEO and Chairman at the same time. This is known as Duality. On the other side, two-tier means two persons hold the seat of the CEO and the Chairman. Two opinions exist in the literature regarding duality i.e., stewardship theory promotes the concept of duality. It states that duality facilitates a strong and unified leadership and makes managerial monitoring effective as insiders have more information and knowledge about the organization than outsiders. Conversely, the opponents argue that duality creates a conflict of interests that impedes managerial monitoring ineffective. This aligns with the agency theory (Jensen, 1993; Krause, Semadeni, & Cannella, 2014).

Pi and Timme (1993) found that CEO duality positively influences efficiency by arguing that dual leadership decreases cost and increases profitability than firms having unitary leadership structures. Conversely, Adeabah et al. (2018) found that CEO duality harms the efficiency of Ghana's banking sector. This is because duality compromises the board's independence, making managerial monitoring and supervision ineffective, thus decreasing efficiency. The other reason cited in the literature is that these CEOs are working on fixed perks and privileges that provide little motivation to enhance the performance of the banking sector (Pathan, 2009). Nanka-Bruce (2011) found that CEO duality has an insignificant and positive impact on efficiency. Contrary to this, Maria and Sanchez (2010) noticed that CEO duality is insignificantly and negatively related to efficiency in Spain.

Kiel and Nicholson (2003) found a positive relation of CEO duality with Tobin Q in Australia. Conyon and He (2017) observed that duality shed a significant and positive impact on profitability in OLS. The studies of Ahmadi, Nejia and Bouri (2017) and Noguera (2020) reported a positive relationship of duality with bank performance. They believed that duality brings unified leadership and better information about company internal and external matters. Aslam and Haron (2020) argued that CEO duality significantly and positively enhances the performance of Islamic banks in OIC countries. They believed that duality has more knowledge and information about bank internal matters. Hence, duality impedes the chance of financial distress in the bank and amplifies the performance. The results are aligned with the stewardship theory. However, on the other flip, Rahman and Haniffa (2005) in Malaysia, Mahmood and Abbas (2011) in Pakistan, Ujunwa (2012) in

Nigeria, Mesut, Bilge, Veysel, and Serdar (2013) in Turkey, Dogan, Elitas, Agca, and Ogel (2013), Garcia-Meca et al. (2014) and Mollah and Zaman (2015) in Pakistan observed that duality decreases the profitability of the banks. Similarly, a research made by Farag et al. (2017) to determine the bank performance by analyzing the various dimensions of corporate governance by using panel regression analysis. They revealed that duality significantly decreases bank performance by using panel regression, whereas no effect is noted in the case of the GMM estimation technique. Kusi et al. (2018), and Ullah, Fang, and Jebran (2020) revealed that CEO duality significantly deteriorates the firm value in Pakistan. They all argued that duality creates a conflict of interest and weakens the board's decision-making. This is consistent with the agency theory. Jayati and Subrata (2018) argued that CEO duality negatively influences public banks' performance and positively affects private bank performance. Furthermore, Sahin, Basfirinci, and Ozsalih (2011) in Turkey, Arouri et al. (2011) in GCC, Liu, Wei, and Xie (2014), and Belhaj and Mateus (2016) in the EU found an insignificant and positive relation of CEO duality with firm performance. Conversely, Conyon and He (2017), Mahmood and Malik (2018) found an insignificant and negative relation of CEO duality with ROA in Pakistan. Abdullah and Azhar (2015) in GCC, Arora and Sharma (2016) in India, Bennouri et al. (2018) and Merendino and Melville (2019) argued that CEO duality does not influence bank profitability. The mixed results suggest further investigation by assessing the impact of governance factors on performance in the Asia-Pacific region. This discussion brings us to the following hypotheses:

H0: There is a significant relationship of CEO Duality and bank efficiency.

H0: There is a significant relationship of CEO Duality with banks' profitability.

### **2.3.3. Gender Diversity and Bank Performance**

It is one of the most burning issues regarding the corporate sector because males and females are traditionally, culturally, and socially different. The research demand answers to a few questions regarding gender diversity such as why it is indispensable to enter females into the corporate board? How will they bring change into a corporate culture that enhances organization performance? Whether their role in the corporate board is taken as a showpiece (token) or key influencers? Whether firms ensure their presence on the corporate board just like breaking the glass ceiling? The theories that better explain the association between diversity and bank efficiency includes critical mass theory and tokenism theory (Kanter, 1977). The critical mass theory suggests that the critical mass of women (30%) is necessary to influence the bank performance positively and indicates the

behavior of key influencers. The tokenism theory posits that token women on the board face discriminating behaviour and thus face obstacles in decision-making. Konrad, Kramer, and Erkut (2008) posit that minimum participation of females on the board is necessary to exert influence and recognize their voice on board. This theory further implies that token women may face three types of fear: visibility, polarization, and assimilation (Kanter, 1977). Visibility implies that token women always look at themselves and work hard to receive recognition for their achievements. Tokens may also feel the pressure of giving importance to their voice. Polarization impedes the dominant group from restricting themselves or showing reluctant to share the informal information with tokens. As a result, they may encounter solitudes in the board. Finally, assimilation exhibits that dominants induced tokens into clichéd class. So, their identity is altered forcefully. Torchia et al. (2011) contend that some boards have only one woman or a small number of women; they are still considered tokens. They argued that women are intelligent in decision-making and multi-task compared to men, who are more task-focused. Kramer, Konrad, Erkut, and Hooper (2016) observed a fundamental difference when the minimum percentage of women is present on the board. The extant literature indicates that these issues may be resolved when thirty percent of directors are females on the board of directors (Strydom, Yong, & Rankin, 2016). The other theory that explains minority status in a group is the social identity theory. This theory implies that persons develop social identities, self-esteem, and self-recognition based on several features such as demographic, culture, gender, race, language, etc. These theories argue that female participation on the board reduces agency risk and diversity in decision-making. Several empirical studies examined the relationship between gender diversity and firm performance such as accounting measures (Conyon & He, 2017; Ionascu et al., 2018; Riyadh et al., 2019; Aslam & Haron, 2020); market measures (Conyon & He, 2017); and efficiency measures (Adeabah et al., 2018).

Maria and Sanchez (2010) found a positive relationship of gender diversity with efficiency in Spain. They claimed that women on the board decrease agency conflict and diversity in decision-making and increase bank performance. In Norway, Beate and Gro (2010) conducted a research to examine women's role on the corporate board as key influencers or tokenism. They argued that women's role as a key influencer in Norway. They contend that more participation of females on the board increases the effective functioning of the board and ultimately enhances efficiency. Banerji, Mahatani, Sealy, and Vinnicombe (2010) argued that having a lack of women's entrance into the corporate board represents a fanatic mindset toward women's achievement and education in Indian firms. The firm just enters the women into the corporate board to meet regulatory requirements

instead of breaking the glass ceiling. Furthermore, more representation of females on the board brings versatile knowledge, skills, experiences, diverse views, working styles, and new paradigms. Using a sample size of 21 banks from 2009 to 2017 in Ghana, Adeabah et al. (2018) elucidated that gender diversity significantly impacts banks' efficiency when twenty-two percent of directors are female on the board. Contrary to the above, Chan and Heang (2010) assessed the association of governance and diversity with efficiency in the Malaysian banking sector. They contended that gender diversity sheds an insignificant and positive impact on cost and profit efficiency. This is because the presence of women on board is considered as a token.

In several studies, Torchia et al. (2011), Pathan and Faff (2013), Johl et al. (2015) in Malaysia, Andersson and Wallgren (2018) in Swedish companies, and Owen and Temesvary (2018) found that more representation of female on the board significantly and positively influences the ROA. They argued that there is a positive relation of women's participation with firm profitability. Garcia-Meca et al. (2014) made a research to examine the impact of gender diversity on bank performance by taking a sample of 159 banks in nine countries for the period from 2004 to 2010. They found a positive and significant impact of gender diversity on bank performance. Liu, Wei, and Xie (2014) observed that gender diversity (percentage of women on board and CEO women) significantly and positively influences the ROA. A study was conducted to investigate whether gender diversity enhances a firm's performance by taking a sample of 125 non-financial firms from 2005 to 2009 (Reguera-Alvarado, de Furentes, & Laffarga, 2015). The entrance of women on the board of firms is mandatory in Spain. They found that more participation of the women on board increases the performance of the firms. Some of the scholars like Reguera-Alvarado, Ruiz, and Laffarga (2017), Ahmadi et al. (2017) in France, Gordini and Rancati (2017) in Italy, Green and Homroy (2017) and Meah and Chaudhory (2019) suggested that more representation of female into board enhances the firm performance. This is because of critical mass theory. By considering a sample of 394 firms from 2001 to 2010, a study was made by Bennouri et al. (2018) to examine the association between gender diversity and bank performance in France. They used both panel estimation techniques such as fixed effect and system GMM to determine such relationships. They revealed that more representation of females on board improves performance. They find insignificant relation of CEO women with firm performance in France. Ionascu et al. (2018) found that CEO women significantly and positively influence profitability. Varnita et al. (2018) assessed the relationship between diversity and ROA in India. They observed that more participation of women on board significantly and positively influences ROA. Furthermore, they contend that the presence of



women in different committees also sheds a significant and direct influence on ROA. Riyadh et al. (2019) stressed that gender diversity positively influences firm performance. A study to examine the association between gender diversity and firm value in Pakistan by Ullah, Fang, and Jebran (2020). They found that women directors and CEO women significantly increase the firm's value. Contrary to the above findings, Ujunwa (2012) reported a negative relationship of gender diversity with ROA in Nigeria. Salim (2013) and Kilic (2015) in Turkey determined the impact of diversity on ROA in Indonesia. The three proxies used to measure gender diversity include the CEO women, female participation on the board, and a Blau index. He found an inverse relationship of the percentage of women on board with ROA in larger firms as compared to smaller firms. In Sri Lanka, Ajanthan et al. (2013) determined the influence of board diversity on profitability. They found a negative relationship of board diversity with profitability in government-owned banks, whereas a positive association exists in private sector banks. Tomislava et al. (2018) found that more participation of females and CEO women shed a significant and adverse impact on performance in Croatia. Mohammad, Abdullatif, and Zakzouk (2018) found that CEO Women have a significant and inverse relationship with ROA. Conyon and He (2017) found a significant and inverse relationship of females on the board with ROA in OLS estimation, while positive and insignificant relation has been observed in the case of fixed effect. They also found that CEO women influence ROA positively and insignificantly in OLS estimation, whereas a negative and insignificant relationship has been noticed in the fixed-effect model. Yasir, Saba, and Hina (2014) made a research to determine the association of diversity and bank profitability in Pakistan. They reported that female participation on the board and the CEO women significantly influenced the performance. Furthermore, Marinova, Plantenga, and Remery (2010) could not find any relation of more diversity on the board with ROA. Belhaj and Mateus (2016) found an insignificant and positive relationship of more female directors on the board with ROA in Europe. Conversely, Ghosh (2017) found an insignificant and negative relationship of female presence and its percentage/representation on the board and CEO women with profitability in Indian banks. Mohammad et al. (2018) and Arnaboldi et al. (2018) found an insignificant and negative relationship of women on board with ROA in Jordan. Aslam and Haron (2020) found that CEO women significantly deteriorate the banks' profitability in OIC countries. The mixed results suggest further investigation by examining the impact of gender diversity on efficiency and profitability in the Asia-Pacific region. This debate brings to the following proposition:

H0: There is a significant relationship between gender diversity (CEO women, participation of women on board) and banks efficiency.

H0: There is a significant relationship between gender diversity (CEO women, participation of women on board) and banks' profitability.

#### **2.3.4. Ownership Structure and Bank Performance**

There is a mixed literature on the relationship between ownership structure and bank performance. Berger, DeYoung, Genay, and Udell (2000) presented the hypotheses, i.e. (a) Domestic banks can operate more efficiently than foreign banks as they are more familiar with local culture, economic, social norms, government policy, regulations, institutional framework, and political factors. This is consistent with home-field advantage; (ii) foreign banks may have a comparative advantage of product differentiation, knowledge transfer, modern technology, better risk exposure, and reduction in the cost of capital. However, it may face difficulties understanding the host country's culture, traditions, politics, regulations, etc. This is aligned with the global field advantage. La Porta, Lopez, and Shleifer (2002) and Maudos and de Guevara (2007) state that the government uses domestic banks to fund its politically motivated projects even if such projects may be inefficient and not feasible. That is why these banks failed to provide a useful intermediation role. This study used foreign ownership as a proxy to measure ownership structure.

Grigorian and Manole (2002), Isik and Hassan (2002), Havrylchyk (2006) in Poland, Barry, Dacanay, Lepetit, and Tarzi (2008) revealed that foreign banks are more efficient than domestic banks. Berger, Hasan, and Zhou (2009) contend that foreign banks have a significant and direct influence on efficiency. Garza-Garcia (2012) in Mexico, Gardener, Molyneux, and Nguyen-linh (2012) in South East Asian countries, Lin et al. (2016) in Asia, and Phung, Cheng, and Kao (2018) observed that foreign banks positively and significantly influence efficiency in Mexico. Conversely, Sathye (2001) in Australia and Saha et al. (2015) found that domestic banks are more efficient than foreign banks. The scholars like Sufian and Habibullah (2010) noticed that a foreign bank negatively and significantly influenced efficiency in Thailand. Adeabah et al. (2018) found that ownership structure (foreign ownership) significantly and negatively influences the efficiency in Ghana. This implies that foreign-owned banks are less efficient than other banks in the market. This is because of the insufficient knowledge about contextual factors of that country. A study was conducted by Phung et al. (2018) to determine the impact of ownership structure and bank efficiency. They noted that foreign ownership significantly decreases the cost-efficiency in both countries. A possible

explanation for such a relationship is that the foreign banks lack knowledge about the dynamics of the local market and implement the policies and procedures of headquarters without assessing the domestic/local dynamics of the market. A scholar like Raphael (2013) argued that ownership structure insignificantly and negatively influences bank efficiency in the context of Tanzania. Hasanul et al. (2017) observed an insignificant but direct association of ownership structure with efficiency in Bangladesh.

Berger et al. (2000) argued that domestic banks are more profit-orientated than foreign banks. Williams (2003), Chantapong (2005) in Thailand, Athanasoglou et al. (2006), and Arouri et al. (2011) in GCC found that foreign ownership shed a significant and direct impact on ROA. A study examined the relationship between ownership structure and firm performance by taking a data from 527 companies from 2015 to 2017 in Bangladesh. It was found that there is a positive relationship of foreign ownership in both accounting and market-based measures (Rashid, 2020). Conversely, Olweny and Shipho (2011), Garcia-Meca et al. (2014), Mamatzakis, Zhang, and Wang (2017), and Gordini and Rancati (2017) found an inverse relation of foreign-owned banks with performance. Aslam and Haron (2020) found that foreign ownership negatively influences the profits of Islamic banks in OIC countries. Phung and Mishra (2016) found a non-linear association of foreign ownership with performance. Initially, it enhances performance upto a certain limit; after that, it decreases performance. Arnaboldi et al. (2018) noted an insignificant and positive impact of foreign ownership on ROA. In Jordan, Nora, Rahman, and Anis (2015) and Tariq (2018) found an insignificant impact of foreign ownership on banks' ROA.

The mixed results suggest further investigation to examine the relationship of ownership structure with efficiency and profitability in the Asia-Pacific region. This discourse brings the following hypotheses:

H0: There is a significant relationship of ownership structure with banks' efficiency.

H0: There is a significant influence of ownership structure on banks' profitability.

#### **2.4. Market Structure Factor and Bank Performance**

The market structure plays a significant role in affecting the performance of the banking sector. It portrays the extent of the competition among the financial institutions. Aziz and Knutsen (2019) used concentration as a proxy to measure the market structure factor. It is the ratio of total assets of the large three banks to the total assets of all the banks in a given year. The previous studies which found mixed results while examining the association of market structure with performance

include Bourke (1989) in Europe, Williams (2003) in Australia, Athanasoglou et al. (2006) in Europe, Naceur and Omran (2010) in MENA, Lin et al. (2016) and Yao et al. (2018) in Pakistan. The literature explains the relationship of market structure with bank performance in the light of the quiet life hypothesis, structure conduct performance hypothesis, relative market power hypothesis, and efficient structure hypothesis.

Hicks (1935) presented the quiet life hypothesis and observed that market power adversely influences efficiency. He stated that the firms even having higher market power declined bank efficiency. This is because of managers pay lesser effort to improve efficiency. Berger and Hannan (1998) found the presence of the quiet life hypothesis and a statistically significant negative relationship of concentration with banks' efficiency. Sathye (2001) found an inverse association of market power with efficiency in Australia. Yildirim and Philippatos (2007) found that market concentration negatively influences efficiency in Europe. Naceur et al. (2009) found significant and inverse relation of concentration with efficiency scores in MENA. This implies that higher concentration decreases the efficiency of banks. Ardianty and Viverita (2011) found that market concentration influences efficiency significantly and negatively. Thus, more concentrated and powerful banks in the market lead to a decrease in their efficiency. This agrees with the quiet life hypothesis. Tan and Floros (2013) argued that highly concentrated banks impede efficiency in China. Phan (2015), Abbas et al. (2016) in Pakistan and Lin et al. (2016) stressed that the concentration ratio adversely affects efficiency. And some other scholars who tested the validity of the quiet life hypothesis include Goldberg and Rai (1996) in European countries, Maudos and de Guevara (2007) in EU markets, and Idries and Hisham (2009) in Jordan. All of them found an insignificant relationship of market power with efficiency and rejected the presence of the quiet life hypothesis in their study settings. Marquez (2002) found an inverse relationship of market structure with efficiency. He argued that in highly competitive markets, the bank increases its lending size by decreasing the screening capabilities of borrowers and offering loans to lenders at a lesser interest rate. This implies banks select low-quality borrowers (adverse selection), thus creating bad debts that deteriorate efficiency. Similarly, a competitive market intends the customer to switch from one bank to another that offers them more returns. This induces banks to offer higher interest rates to depositors on their money to attract and retain them. Otherwise, rapid customer switching from one bank to another decreases banks' financing structure, which impedes their efficiency. Hence, we concluded that high competitive markets or low concentrated markets find an inverse relationship with efficiency due to adverse selection of the borrowers and rapid switching of the customers from one bank to another. The scholars who argued that concentration influences efficiency significantly

and positively include Bain (1956), Demsetz (1973), Shepherd (1982), and Chortareas et al. (2013). Bain (1956) presented the Structure Conduct Performance (SCP) hypothesis and found a direct link of concentration with efficiency. The banks earned higher profits by decreasing deposit rates and increasing the lending rates to create more spreads in highly concentrated markets. Moreover, banks earned supernormal profits in highly concentrated markets (monopoly) due to lower costs of collusion or less competition. Sufian and Habibullah (2010) found a significant and positive impact of concentration ratio with ROA in Thailand and in Indonesian banking sector. Raphael (2013) in Tanzania, Shawtari et al. (2015) in Yemen, and Sufian et al. (2016) in Malaysia demonstrated a significant and positive relationship between concentration and efficiency. They argued that banks in highly competitive markets earn supernormal profits due to less competition and lower cost of collusion. This matched with the findings of the structure conduct performance hypothesis. Phan et al. (2016) observed that concentration positively and significantly influences efficiency in emerging Asian countries. Shepherd (1982) said that banks earn higher supernormal profits and larger market power or share by offering well-differentiated products in the market and endorsed the relative market power hypothesis. He found a positive association of concentration with efficiency. Demsetz (1973) tested the presence of the efficient structure hypothesis and found a positive relationship of concentrated markets with bank efficiency. This hypothesis postulates that banks can earn more profits and enhance market shares by lowering the cost of doing business and operational costs. Berger (1995) categorizes the efficient structure hypothesis into X-efficiency and Scale efficiency. Good management, better technology, and lower costs increased firms' profitability in x-efficiency. However, the firms earned higher profits due to the economies of scale in scale efficiency. Chan and Karim (2010) found a negative concentration with bank efficiency in the Asian region but positively influenced bank efficiency in the MENA region. Iveta (2015) found insignificant relation of concentration ratio with efficiency.

Bourke (1989) argued that banks earn profits in a more concentrated and imperfect market by offering lower interest rates to depositors and lending loans at a higher interest rate. His findings support the structure conduct performance hypothesis. Athanasoglou et al. (2006) found a positive relation of concentration with ROA and supported the structure conduct performance hypothesis. Samad (2008) found that concentration enhances efficiency and shows evidence of the efficient structure hypothesis in Bangladesh. Sufian and Habibullah (2010) found a positive relation of concentration with ROA in Indonesia. Abduh and Idrees (2013) found that market concentration significantly and positively influences performance in Malaysia. Chan, Koh, and Zainir (2015) revealed that financial freedom itself does not impact the bank efficiency while demonstrating a

significant and positive impact in the presence of market power (concentration) in ASEAN-5 countries. Talaso (2015) found a positive impact of market power on ROA in Kenya. Niklas and Rasmus (2016) determined that how market structure affects banks' ROA. They found that concentration affects ROA positively and significantly in advanced and emerging economies. Aziz and Knutsen (2019) found that bank concentration positively and significantly influences profitability in Arab countries. Contrary to the above, Williams (2003) in Australia, Naceur and Omran (2010) in MENA, Mensi and Zouari (2010), and Olweny and Shipho (2011) found inverse relation of market concentration with bank performance. Wu and Shen (2013), Uddin and Suzuki (2014) and Tan (2016) reported that concentration deteriorates banks' profitability. Ujah, Brusa, and Collins (2017) found a negative relationship between bank structure (higher concentration) and ROA. Yao et al. (2018) found that concentration adversely influences the bank's profitability. Andries et al. (2018) found a significant and negative relationship of bank concentration with profitability by taking data from 137 commercial banks in 17 countries. Khan and Hanif (2018) conducted research to examine the impact of market structure indicators on bank performance by taking a sample of 24 commercial banks from 1996 to 2015 in Pakistan. They noticed a weak association between market structure indicators and bank performance. The findings were in line with the efficient structure hypothesis in Pakistan. However, Naceur and Kandil (2009) in Egypt and Muda, Uddin, and Embaya (2013) in Malaysia, Islam and Nishiyama (2016) in South Asian Countries found an insignificant but positive impact of concentration ratio with ROA. Doumposa et al. (2017) observed an insignificant but inverse impact of concentration ratio on bank performance.

The mixed results suggest further investigation by assessing the influence of market structure factors on bank performance in the Asia-Pacific region. This debate brings to the following proposition:

H0: There is a significant impact of market-related factors on banks' efficiency.

H0: There is a significant influence of market-related factors on banks' profitability.

## **2.5. Institutional Factors and Bank Performance**

Chan and Karim (2010) contend that institutional factors significantly determine bank performance. The economic freedom index issued by the Heritage Foundation and the global competitiveness index issued by World Economic Forum as a proxy to measure institutional factors. There are many benefits of a better economic freedom index and a global competitiveness index.

Such an index attracts foreign firms and financial institutions for investment, generates economic activities, employment, the productivity of businesses, increases healthy competition, etc. This causes banks to lend more money in diversified sectors to reduce their risk and increase their income (Asteriou, Pilbeam, & Tomuleasa, 2016).

Casu and Molyneux (2003) indicated that institutional factors significantly explain the differences in efficiency levels among the European countries. Lensink and Meesters (2007) observed that better institutions enhance the banks' efficiency. They measured the institutional factors through country governance indicators. All the dimensions of country governance indicators significantly influence the efficiency of the banking sector. Beach and Kane (2008) argued that excessive government interference and strict bank regulations restrict economic freedom and lead to inefficiencies. Chen (2009) suggested that institutional factors such as a high index of economic freedom and better country governance increases efficiency. Naceur et al. (2009) determined institutional factors, financial structure (stock market capitalization, concentration), and bank-specific factors on bank efficiency. They observed that law and order situations positively influence bank efficiency; however, lower bureaucracy or corruption did not influence banks' efficiency. Sufian and Habibullah (2010) found a direct relation of the economic freedom index with ROA in Malaysia. Its sub-indices like business and monetary shed positive, but financial finds inverse relation with ROA in China. Chortareas et al. (2013) suggested a positive and significant influence of the index of economic freedom on efficiency. Mamatzakis et al. (2013) assessed the influence of the economic freedom of Fraser Institute on bank performance in European countries. They used the regulation index from economic freedom as the explanatory variable that comprises three sub-indices: credit, business, and labour regulations. They found that all these three sub-indices exert a negative impact on inefficiency. This further implies that few indicators of credit regulations, such as ownership structure and competition decreases bank inefficiency. Barth et al. (2013) observed that institutional factors significantly influence bank efficiency. Anwar, Zulkefly, Mariani, and Mansor (2014) conducted research to observe the influence of the economic freedom of Heritage Foundation and country risk on bank efficiency by comparing the Jordan banking sector with Gulf countries. They reported that the Jordanian banking sector is efficient compared to GCC countries. Similarly, Chan and Karim (2016) conducted research to assess the relationship between institutional factors and DEA. They observed that the countries having more financial freedom are more cost-efficient. They reported a positive relation of government effectiveness with bank efficiency. However, political stability, regulatory quality, and corruption were found to affect bank efficiency negatively. Asma and Hadeel (2017) investigated the influence of the economic freedom of the Heritage

Foundation on efficiency in Jordan. They revealed that increased government interference harmed bank efficiency. Emmanuel, Joshua, Anthony, and Mohammed (2017) observed an inverse relationship between the financial freedom index and cost-efficiency.

Gwartney and Lawson (2003) found positive relation of economic freedom with banks' performance. This implies that the bank's earnings are higher in countries with high economic freedom. Low, Ghazali, Ramlee, and Said (2010) found positive relation of economic freedom with ROA in East Asian countries. Sufian and Habibullah (2010) in Malaysia; Shahabadi and Samari (2013) in developed and developing countries found that the economic freedom index and its sub-indices such as business freedom, financial freedom, and freedom from corruption correlated positively to ROA. Naceur and Omran (2010) claimed that institutional factors enhance banks' performances. As a result, corruption increases cost efficiency while improved law and order situation decreases cost efficiency. Doumposa et al. (2017) demonstrated that the government's effectiveness and control of corruption had a significant positive impact, whereas regulatory quality, the rule of law, political stability, voice, and accountability had an insignificant and positive impact on ROA. Aziz and Knutsen (2019) conducted research to examine the influence of economic freedom quality on ROA by taking the period from 1985-to 2016. The data relating to economic freedom were taken from Fraser Institute. They found a positive relation of economic freedom with banks' profitability. Arias, Maquieira, and Jara (2019) conducted research to analyze the impact of legal and institutional environmental factors on the banking sector by using data from 52 countries from 2005 to 2014. They argued that more legal protection for lenders and borrowers directly influences the performance. Their findings revealed that better regulatory quality influences banks' profitability positively. However, control of corruption was found to have no impact on banking sector performance. Bitar et al. (2018) used Economic Freedom Index as a control variable. They found that the institutional factors and economic freedom index reduces the risk of credit defaults and ultimately increase bank profitability. By using a dynamic panel estimation technique, a study was carried out by Asteriou, Pilbeam, and Tomuleasa (2021) to assess the influence of institutional and regulatory factors on performance and stability in European countries. They revealed that the economic freedom index boosts banks' performance.

The mixed results suggest further investigation to find the influence of institutional factors on efficiency and profitability in the Asia-Pacific region. This debate brings the following hypotheses:

H0: There is a significant relationship of institutional factors with bank efficiency.

H0: There is a significant relationship between institutional factors and bank profitability.



## 2.6. Corporate Social Responsibility Disclosure Index and Bank Performance

Disclosure protocols are monitoring devices that reduce information and agency costs by sharing valuable and quality information between the principal (bank) and agent (stakeholders). Carroll (1979) presented three prone models to evaluate the performance of a firm such as economic (profit), legal (profit and observance of regulations related to labour and environmental law), ethical and philanthropic (it includes doing what is right, fair, and involve making an effort to benefit society, e.g., donating, funds, services, etc.). CSR disclosure is a strategy that makes banks more competitive in the market. CSR is based on ESG models such as environmental, social, and governance. CSR disclosure is one strategy that makes banks more competitive in the market. CSR disclosure is essential for many stakeholders such as shareholders, employees, managers, regulators, creditors, investors, environmentalists, civil societies, and media as they have taken their decision in the light of this information. The stakeholders desire that banks may fulfill their expectations. Research suggests that banks enjoy many benefits, such as improving their image/reputation, improving the retention and loyalty of the customer, attracting investors and prospective employees, improving relations with regulators, improving employee productivity, and reducing the cost of capital. This study used CSR as a proxy to measure environmental factors based on the ESG model, such as environmental, social, and governance.

Two different opinions are prevailing in the literature regarding CSR and firm performance such as;

- (a) Friedman (1970) argued that the manager's main responsibility is to increase firm profit and shareholder wealth, and doing anything else will be a misuse of authority. Hence, it reduces the profit of the company. He found that CSR deteriorates a bank's profitability. The supporters of findings a positive association of CSR with performance gives justification that engaging in CSR brings additional expenses to firms. Firms used CSR to manipulate earnings management or window dressing to present the accounts as more lucrative to investors, communities and avoid paying heavy taxes to governments. This is consistent with agency theory.
- (b) Freeman (1984) found that CSR disclosure positively influenced the firm performance by arguing that the firm's task is to meet the expectations of various stakeholders. This agrees with the stakeholders theory and legitimacy theory. This ultimately increases the trust of several stakeholders in the firm. They justified that investments in CSR would improve its image/reputation, improve the retention and loyalty of the customer, improve service

delivery, attract investors and prospective employees, improve employee productivity, and reduce the cost of capital.

Keffas and Olulu-Briggs (2011) in the US, UK, and Japan and Ohene-Asare and Asmild (2012) in Ghana divide the banks into two categories, i.e., banks that disclose CSR activities and the banks that did not disclose CSR activities. They found a positive relation of CSR with bank efficiency. They discovered that banks having CSR disclosure manage their assets and loans more efficiently. Zhu, Stjepcevic, Baležentis, Yu, and Wang (2017) evaluated the influence of CSR on efficiency by applying non parametric approach in the context of China. They reported a significant and direct link of CSR with efficiency. Belasri et al. (2019) conducted a research to find the association between CSR and bank efficiency by taking international samples of banks from 2009-to 2015. They found a positive relation of CSR with efficiency, especially in developed countries; however, no relation was found in developing countries. Forgione, Laguir, and Staglianò (2020) found an inverse relationship between social and environmental activities with efficiency. This implies that the more the banks are involved in social and environmental activities, their efficiency of banks becomes lesser.

Bragdon and Marlin (1972) was the firstone to link the corporate social responsibility with performance. They found a positive relation of CSR with bank performance. Hammond and Slocum (1996) argued that firms are adopting CSR improve their reputation and reduce financial risk compared to non-CSR firms. Simpson and Kohers (2002) in the US and Rahmawati and Dianita (2011) observed that CSR significantly and positively influences ROA in Indonesia. Wu and Shen (2013), Fernandez (2015) in Spain, Djalilov, Vasylieva, Lyeonov, and Lasukova (2015) in Europe, Suteja, Gunardi, and Mirawati (2016) in Indonesian banks, Weber (2017) in China, and Mravlja (2017) found that CSR influences ROA positively and significantly with ROA. Similarly, Charumathi and Ramesh (2017) determined the impact of environmental and social disclosure on the performance of 100 Indian firms from 2010 to 2014. They elucidated that firm value improved significantly with environmental and social disclosures. Maqbool and Zameer (2018) divided CSR into four categories such as community, environment, workplace, and diversity. Their findings indicated that CSR positively contributes to performance. Gangi, Mustilli, Varrone, and Daniele (2018) determined how CSR affects bank performance in Europe. They found a positive relationship of CSR engagement with bank performance that confirms the resource-based view and stakeholder theory. By using the ESG score from the Bloomberg database, Fatemi, Glaum, and Kaiser (2018)

argued that ESG disclosures increased the value of the firms. By taking data from 120 companies from 2011 to 2016 in Iran, Alipour, Ghanbari, Jamshidinavid, and Taherabadi (2019) illustrated that environmental disclosure amplified the firm performance in Iran. Similarly, Chijoke-Mgbame, Oscar-Mgbame, Akintoye and Ohalehi (2019) observed a positive relationship of CSR disclosure with firm performance. Buallay (2019) made a research to examine the impact of ESG disclosure factors on bank performance in European countries. They observed a positive and significant impact of ESG disclosure on bank performance. However, when the individual relationship of ESG factors with bank performance was investigated, she found a positive relationship of environmental factors with profits, whereas corporate social responsibility disclosure showed a negative and significant impact on banks' profit. By taking data from 500 listed firms in the US from 2009 to 2018, Alareeni and Hamdan (2020) conducted a research to examine the impact of environmental, social, and governance (ESG) factors individually and collectively on bank performance. They found that ESG disclosure significantly and positively influences firm performance. However, they argued that environmental and corporate social responsibility disclosure is negatively associated with profitability, whereas a positive relation of corporate governance disclosure exists with bank performance. Aruoriwos et al. (2020) found that CSR disclosure significantly and positively influenced the ROA. Ashraf, Khan and Tariq (2017) in Pakistan and Bangladesh, Famiyeh (2017) in Ghana, Mahmood and Malik (2018) in Pakistan, Selcuk (2019) in Turkey, Nizam, Ng, Dewandaru, Nagayev, and Nkoba (2019), Atmeh, Shaban, and Alsharairi (2020) and Szegedi, Khan and Lentner (2020) in Pakistan by using international samples found a positive relation of CSR with performance. Contrary to the above arguments, Hemingway and MacLagan (2004) believed that CSR negatively affects profitability. They argued that the managers used CSR for fraudulent activities. Oyewumi, Ogunmeru and Oboh (2018) investigated the relationship of CSR disclosures with bank ROA in the context of Nigeria. They reported that CSR negatively influenced ROA. Buallay, Kukreja, Aldhaen, Mubarak, and Hamdan (2019) conducted research to examine the impact of corporate social responsibility disclosure on firm performance in the light of stakeholder theory. They observed a negative relationship of CSR disclosure with banks' profits. A study was conducted by Bolton (2020) to determine the influence of CSR on ROA. He found that CSR disclosure significantly enhances profitability in the USA. Fahad and Busru (2021) investigated a sample of 386 companies from 2007 to 2016 in India and found that CSR disclosure negatively influences the return on assets. Moslemany and Etab (2017) analyzed the influence of CSR on bank performance in Egyptian banks by taking data from 2008 to 2011. The content analysis is used to get information related to various aspects of CSR from annual reports or sustainability reports. They studied four dimensions of CSR

such as environment, community, customer, and employee. They found an insignificant and positive relationship of the environment and employees aspect of CSR with ROA, whereas an insignificant and negative relationship of community and customers was noticed with ROA. The scholars who found an insignificant impact of corporate social responsibility on ROA included Sahin et al. (2011), Taskin (2015), Gbadamosi (2016) and Riyadh et al. (2019).

The mixed results suggest further investigation by assessing the influence of CSR disclosure on bank performance in the Asia-Pacific region. This argument brings the following hypotheses:

H0: There is a significant relationship between corporate social responsibility disclosure and banks' efficiency.

H0: There is a significant relationship between corporate social responsibility disclosure and bank profitability.

## **2.7. Financial Reporting Quality (FRQ) as a Moderating Variable**

The topic of financial reporting quality has always been an issue of interest for various stakeholders such as shareholders, employees, potential investors, researchers, and the accounting profession itself, as they can make their decisions based on such information (Kumari & Pattanayak, 2017). The wider gap in the information between the banks and various stakeholders forces the managers to use the superior information in their favour. Financial reporting is the end product of the accounting process to provide SMART (specific, measurable, attainable, realistic/reliable, and timely) information to the internal and external stakeholders for decision-making. It tells us that how efficiently the management uses the organization's assets under its control. The proxy used to measure the financial reporting quality is earning management. Earning management is the imaginative way to utilize the different accounting methods to make financial statements look better. They argued that earning management is an illegal act of the manager to mislead several stakeholders about firm performance (Healy & Wahlen, 1998). According to Richardson (2000), earning management as a process in which the managers use different accounting methods to distort the results according to their interests. Rahmawati and Dianita (2011) in his study discussed the motivation of earning management, the way manager uses specific accruals to manipulate earnings, and how it affects the firm's resources. The imperfect information in the market enforces the managers to do the earning management practices. The managers can manipulate earnings due to (a) Income smoothing because prospective investors invest in those firms that have a continuous growth pattern; (b) External expectations such as to attract the prospective investors and creditors (window

dressing) to satisfy the shareholders, to improve its credit ratings, to escape from government interference by showing less/more profit, to avoid from paying taxes, to meet the regulatory requirements imposed by the central bank regarding asset quality, liquidity, and capital adequacy; (c) To meet expectations of internal stakeholders such as to improve the compensation of CEOs and management and employees (Barth, Gomez-Biscarri, Kasznik, & Lopez-Espinosa, 2017). Healy and Wahlen (1998) stated that the managers preferred types of accruals such as loan loss provision/reserves and deferred taxes. The manager's discretion is high in managing the loan loss reserves/provisions of firms/organizations. Lastly, earning management influences the firm's resources as the managers mislead the various stakeholders about its financial condition and decide on this distorted information.

Kang and Kim (2011) used earning management as a moderator variable between corporate governance and firm performance in Korea. Latif et al. (2018) used earning management as a moderating variable between corporate governance and Tobin Q. They observed that corporate governance decreases the imbalance of information through better financial reporting quality. They reported that earning quality mediates the association between corporate governance and Tobin Q. However, Sun, Salama, Hussainey, and Habbash (2010) observed that managers revealed more information about CSR when engaging in earnings manipulation. Rahmawati and Dianita (2011) believed that the managers who used CSR to manipulate the earnings, ultimately affected firm performance. Scholtens and Kang (2013) found an inverse relationship of CSR with earning management. Suteja et al. (2016) reported that earning management significantly and negatively moderates the association of CSR disclosure with bank performance in Indonesia. Sial, Chunmei, Khan, and Nguyen (2018) assessed the moderating effect of earning management between CSR and firm performance in China. They observed that earning management negatively moderates the relationship between CSR and firm performance.

The theories that support the concept of financial reporting quality and performance include information asymmetry, agency, stewardship theory, and stakeholder. However, the literature is silent on examining the indirect effect of financial reporting quality on the governance-performance and regulatory-performance relationship.

### **2.7.1. Financial Reporting Quality as a Moderator between Corporate Governance and Bank Performance**

Scant literature is available to determine the moderating effect of financial reporting quality on corporate governance and bank performance. Kang and Kim (2011) in Korea and Latif et al. (2018) in Pakistan used earning management as a moderator variable between corporate governance and firm performance. FRQ reduces agency, transaction, and information costs by providing SMART information to various stakeholders. The issue occurs when the interests of the managers and various stakeholders are unaligned or not matched due to imperfect information and agency costs. As the managers have more information than stakeholders, they manoeuvre the superior information or manipulate the financial statements to protect their interests. If the information gap is less between the principal and agent, it can reduce agency costs and enhance the organization's performance (Richardson, 2000). However, stewardship theory postulates that managers act as trustworthy individuals. Hence, they run business affairs with full commitment to enhancing the company's wealth (Kiel & Nicholson, 2003). They supposed that the interest of the manager and owner is aligned in this case; hence, managers do not manipulate financial statements. Abbadi, Hijazi, and Al-Rahahleh (2016) argue that earning management reduces shareholders' wealth due to imbalanced information and agency problems.

#### **2.7.1.1. Board Size**

Two opinions are prevailing in the literature regarding board size: (a) Larger board decreases earning manipulation and improves FRQ and performance. Akeju and Babatunde (2017) observed a direct relationship of earning management with the board. This implies that a larger board possesses members with versatile knowledge, skills, and experience to monitor and manage the company's affairs effectively, ultimately enhancing bank performance (b) A larger board increases earning manipulation and decreases FRQ and bank performance. Scholars favouring this argument include Rashida, Fairuzana, and Mohamed (2006) in Malaysia; and Mahad, Zakaria, and Ismail (2015). They argued that a larger board is ineffective in monitoring and oversight role, and they are indulged more in earning manipulation and decreased performance. Contrary to this opinion, Ostadhashemi, Shafati, and Aliei (2017) found that earning manipulation is less in those firms where the board size is small. They contended that communication and coordination are better on the smaller board, ultimately improving bank performance.

### **2.7.1.2. CEO Duality**

Mohamad, Abdurrahman, Keong, and Garrett (2020) found a negative CEO duality with earning management in Malaysia. According to stewardship theory, two different opinions are prevailing in the literature regarding CEO duality, i.e. (a) duality decreases earning manipulation. The theory supports the duality concept (the same person should be CEO and Chairman). It assumes that insiders know more about the entity than outsiders, leading to better decisions and effective monitoring. They further argued that duality will facilitate strong and unified leadership and its role of monitoring. Mahad, Zakaria, and Ismail (2015) argued that duality establishes board effectiveness as the same person has more knowledge and exposure regarding the organization's internal and external threats. Hence, as a result of duality, earning manipulation is less, which ultimately improves the performance of the banking sector (b) duality increases earning manipulation according to agency theory. The theory criticizes the duality concept as it creates a conflict of interest, decreases board independence, and ultimately reduces their oversight role (Krause et al., 2014). The scholars support the argument that duality increases earning manipulation, include Hamad (2010) in Malaysia. Bradbury, Mak, and Tan (2006) found an inverse relationship of FRQ with CEO duality. They claimed that the managers are involved in fraudulent activities or use the information.

### **2.7.1.3. Gender Diversity**

Two opinions are prevailing in the literature regarding gender diversity: (a) more diversity on board reduces earning management. Agency theory posits that diversity on the board may offer better monitoring of management. This implies that a more diverse board is lesser involved in earning manipulation; hence stakeholders enjoy more reliable information regarding financial reporting. Tiago et al. (2018) found that fewer earning manipulations were found in those firms where CEO is female as compared to the male CEO. Similarly, firms with more women on board are less involved in earning manipulation than men. Faten, Amal, Nadia, and Adnane (2015) examined the influence of diversity and CEO women on earning management in listed firms of France. They also observed that earning manipulation is less in those organizations where female participation on the board is more. However, they did not find any relation of CEO women with earning management practices. The scholars who are in favour of the argument that more diversity (gender) on the board makes them lesser indulged in reporting misstatements and concealment of the taxes include Wicaksana, Yuniasih, and Handayani (2017), Arun, Almahrog, and Aribi (2015) and Abbot, Parker,

and Presley (2012) (b) less diversity in the board increases earning management. Simialrly, Fan, Jiang, Zhang, and Zhou (2019) observed more manipulations in firms with lesser gender diversity.

### **2.7.2. Financial Reporting Quality as a moderator between Corporate Social Responsibility Disclosure Index and Bank Performance**

There is a scarcity of research investigating the moderating effect of financial reporting quality concerning corporate social responsibility disclosure and firm performance. Disclosures are a tool to reduce the agency and information costs among the stakeholders. The process of disclosing the information consists of three parts: the sender, the information, and the receiver. In the case of CSR disclosure, the sender is the company, the information is the financial reports, and the receiver is the stakeholders. Information asymmetry theory and agency theory posits that agents (banks) have superior information to the principal (agents), so they manipulate earnings in an opportunist way under the ambit of CSR disclosure to influence various stakeholders. Further, earning management seems to be an agency cost because the managers are inclined to meet their demands by manipulating the financial reports (Jensen, 2001; Calton & Payne, 2003). This exhibits that the managers use CSR to alleviate the agency problems between managers and stakeholders by decreasing information costs. Consequently, CSR restricts the incentives to manage earnings. Sun et al. (2010), Rahmawati and Dianita (2011), Suteja et al. (2016), Sial et al. (2018) used earning management/financial reporting quality as a moderator between CSR disclosure and firm performance.

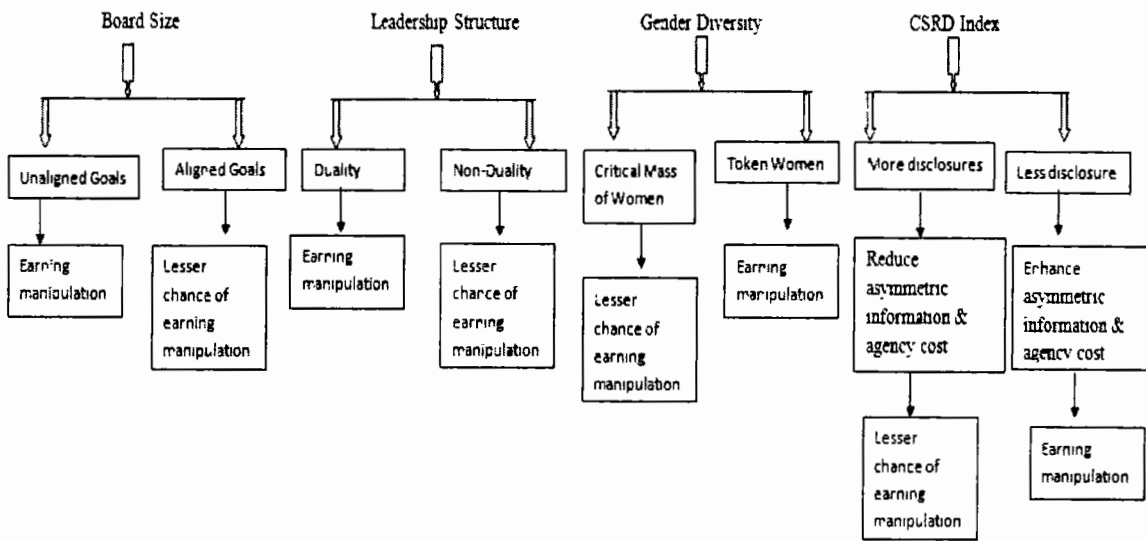
This discussion brings to the following hypotheses:

H0: Financial reporting quality moderates the relationship of corporate governance factors with bank performance.

H0: Financial reporting quality moderates the relationship of corporate social responsibility disclosure with bank performance.

Figure 2.7.2. explains the moderating role of financial reporting quality between explanatory variables and explained variable.





**Figure 2.7.2. Earning Management as a Moderator Variable**

## 2.8. Control Variables

It can be classified as demographic features, macro-economic conditions, bank-specific factors, financial sector development, and worldwide governance indicators (Dietsch & Lozano-Vivas, 2000). Demographic factors are contextual factors depicting the conditions in which banks operate and how they offer services to the density of the population. It includes population and demand density. These indicators portray the circumstances under which the bank functions. The services provided by the banks in low population density countries increases restrict banks from increasing efficiency levels due to increased cost. The supply of banking services in the areas with a low population density increase banking costs and reduces efficiency levels. Finally, the banks working in markets with a lower density of demand incur more expenses as this restricts the bank branches from enhancing their efficiency levels (Dietsch & Lozano-Vivas, 2000; Naceur & Omran, 2010). Financial intermediation is the ratio of gross loans to total deposits. If this ratio is less than one, the bank relies on its deposits to provide the credit; however, if the ratio is greater than one, banks make money at a higher interest rate rather than depending on their resources. In this case, banks face the issue of liquidity risk. This ratio also explains how the banks offer much credit to the investors from the depositor's fund, which may expose a default risk (Muriithi, 2016). Saha et al. (2015) in Malaysia and Ibrahim (2017) in Iraqi banks found that the intermediation ratio positively influences efficiency and profitability. Conversely, Zheng et al. (2017) found a significant and inverse relation of intermediation with bank performance in Bangladesh. Rodney and Jing (2018) found that intermediation has no impact on profitability. The variables that explain the macro-economic factors include GDP growth rate, inflation, and unemployment. Mixed literature is available on the relationship of macroeconomic factors with bank performance (Abbas et al., 2016; Batir et al., 2017; Hasanul et al., 2017; Phan et al., 2018; Yao et al., 2018; Aziz & Knutsen, 2019). The variables that describe the financial sector development include private sector credit, liquid liability to GDP, or Assets to GDP, stock market capitalization (Naceur et al., 2009; Nisar et al., 2015; Tan, 2016; Sufian et al., 2016; Yao et al., 2018; Aziz & Knutsen, 2019; Doumposa et al., 2017). In these studies, it was found that there is a significant and positive relationship between banking sector development and bank performance. Chan and Karim (2016) used dimensions of worldwide governance indicators (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, law and order, control of corruption) as control variables.

The hypothesis summary analysis of explanatory variables and explained variables based on previous literature is given in Table-1.

Table-1. Hypothesis Summary Analysis based on Previous Research/Literature

Hypothesis	Positive	Negative
<b>Bank-Specific Factors</b>		
There is a significant relationship of NPL with TE	Raphael (2013); Tan and Floros (2013); Sufian et al. (2016); Phung et al. (2018); Belasri et al. (2019)	Havrylychuk (2006); Banker et al. (2010); Sufian and Habibullah (2010) in Thailand; Saha et al. (2015); Batir et al. (2017)
There is a significant relationship of NPL with ROA	Khan et al. (2014); Akhtar et al. (2011); Aziz and Knutsen (2019)	Davydenko (2010); Wu and Shen (2013); Shahabadi and Samari (2013); Menicucci and Paolucci (2016); Salike and Ao (2017); Ghosh (2017); Yao et al. (2018)
There is a significant relationship of liquidity (deposits) with TE	Batir et al. (2017); Sun et al. (2017)	Davydenko (2010); Phan et al. (2018)
There is a significant relationship of liquidity (deposits) with ROA	Muda et al. (2013); Saeed (2014); Menicucci and Paolucci (2016); Mumtaz and Sajjad (2017); Ibrahim (2017); Rodney and Jing (2018)	Khan et al. (2014)
There is a significant relationship of liquidity (loans) with TE	Sufian and Habibullah (2010); Raphael (2013); Chortareas et al. (2013); Dharmendra and Bashir (2015); Shawtari et al. (2015); Sufian et al. (2016); Abbas et al. (2016); Batir et al. (2017)	Havrylychuk (2006); Akmal and Saleem (2008); Naceur et al. (2009); Tan and Floros (2013)
There is a significant relationship of liquidity (loans) with ROA	Bourke (1989); Athanasoglou et al. (2006); Gul et al. (2011); Syafri (2012); Saeed (2014); Menicucci and Paolucci (2016); Tan (2016); Yao et al. (2018); Jayati and Subrata (2018); Hasanov et al. (2018)	Sufian and Habibullah (2010); Davydenko (2010); Belhaj and Mateus (2016); Djalilov and Piesse (2016)
There is a significant relationship of Capitalization with TE	Rossi et al. (2005); Naceur et al. (2009); Sufian and Habibullah (2010); Chan and Heang (2010); Raphael (2013); Chortareas et al. (2013); Soba et al. (2016); Sufian et al. (2016); Abbas et al. (2016); Hasanul et al. (2017)	Tanna et al. (2011); Shawtari et al. (2015); Lin et al. (2016); Batir et al. (2017)

There is a significant relationship of Capitalization with ROA	Bourke (1989); Berger (1995); Athanasoglou et al. (2008); Naceur and Omran (2010); Wasuuzzaman and Gunasegavan (2013); Khan et al. (2014); Menicucci & Paolucci (2016); Ghosh (2017); Gitau et al. (2017); Hasanov et al. (2018); Yao et al. (2018); Aziz and Knutsen (2019)	Gul t al. (2011); Akhtar et al. (2011); Abduh and Idrees (2013); Zheng et al. (2017); Batir et al. (2017); Bitar et al. (2018); Phung et al. (2018)
There is a significant relationship of bank size with TE	Rossi et al. (2005); Havrylych (2006); Pasiouras (2008); Chan and Heang (2010); Tanna et al. (2011); Barth et al. (2013); Tan and Floros (2013); Phan et al. (2016); Sufian et al. (2016); Abbas et al. (2016); Soba et al. (2016); Hasanul et al. (2017)	Sathye (2001); Isik and Hassan (2002); Sufian and Habibullah (2010); Dharmendra and Bashir (2015); Shawtari et al. (2015); Lin et al. (2016); Batir et al. (2017)
There is a significant relationship of bank size with ROA	Athanasoglou et al. (2006); Sufian and Habibullah (2010); Wasuuzzaman and Gunasegavan (2013); Menicucci and Paolucci (2016); Gitau et al. (2017); Zheng et al. (2017); Tomislava et al. (2018); Yao et al. (2018); Jayati and Subrata (2018); Aziz and Knutsen (2019)	Sufian and Habibullah (2010); Syafri(2012); Raza et al. (2013); Belhaj and Mateus (2016); Doumposa et al. (2017)

### Corporate Governance Factors

There is a significant relationship of board size with TE	Chan and Heang (2010); Maria and Sanchez (2010); Tanna et al. (2011); Salim et al. (2016); Soba et al. (2016)	Beate and Gro (2010); Nanka-Bruce (2011)
There is a significant relationship of board size with ROA	Kiel and Nicholson (2003); Salim (2013); Johl et al. (2015); Arora and Sharma (2016); Herdjiono and Sari (2017); Ghosh (2017); Farag et al.(2017); Ahmadi et al. (2017); Gordini and Rancati (2017); Bennouri et al. (2018); Adeabah et al., (2018); Andersson and Wallgren (2018); Mahmood and Malik (2018); Riyadh et al. (2019); Merendino and Melville (2019); Meah and Chaudhory (2019); Aruoriwo et al. (2020)	Torchia et al. (2011); Ujunwa (2012); Pathan and Faff (2013); Mollah and Zaman (2015); Abdullah and Azhar (2015); Conyon and He (2017); Varnita et al.(2018); Tomislava et al. (2018); Jayati and Subrata (2018); Green and Homroy (2017); Noguera (2020) and Ullah et al. (2020)
There is a significant relationship of CEO duality with TE	Pi and Timme (1993); Nanka-Bruce (2011)	Maria and Sanchez (2010)

There is a significant relationship of CEO duality with ROA	Kiel and Nicholson (2003); Arouri et al. (2011); Belhaj and Mateus (2016); Ahmadi et al. (2017); Bennouri et al. (2018); Noguera (2020); Aslam and Haron (2020)	Mesut et al. (2013); Mollah and Zaman (2015); Abdullah and Azhar (2015); Arora and Sharma (2016); Conyon and He (2017); Farag et al. (2017); Mahmood and Malik (2018); Jayati and Subrata (2018); Adeabah et al., (2018)
There is a significant relationship of CEO Women with TE	Kramer et al. (2016)	
There is a significant relationship of CEO Women with ROA	Ionascu et al. (2018); Bennouri et al. (2018); Ullah et al. (2020)	Yasir et al. (2014); Ghosh (2017); Tomislava et al. (2018); Mohammad et al. (2018); Aslam & Haron (2020)
There is a significant relationship of the Percentage of Women on board with TE	Maria and Sanchez (2010); Chan and Heang (2010); Kramer et al. (2016)	
There is a significant relationship of the Percentage of Women on board with ROA	Belhaj and Mateus (2016); Riyadh et al. (2019); Varnita et al. (2018); Andersson and Wallgren (2018); Pathan and Faff (2013); Johl et al. (2015); Conyon and He (2017); Green and Homroy (2017); Ullah et al. (2020); Gordini and Rancati (2017); Reguera-Alvarado et al. (2017); Bennouri et al. (2018)	Ujunwa (2012); Salim (2013); Kilic (2015); Ghosh (2017); Tomislava et al. (2018); Mohammad et al. (2018)
There is a significant relationship of ownership structure with TE	Isik and Hassan (2002); Barry et al. (2008); Berger et al. (2009); Gardener et al. (2012); Lin et al. (2016); Hasanul et al. (2017); Phung et al. (2018)	Sathye (2001); Sufian and Habibullah (2010); Raphael (2013)
There is a significant relationship of ownership structure with ROA	Williams (2003); Athanasoglou et al. (2006); Arouri et al. (2011); Jayati and Subrata (2018); Rashid (2020)	Olweny and Shipho (2011); Mamatzakis et al. (2017); Gordini and Rancati (2017); Adeabah et al., (2018); Aslam & Haron (2020)

### Corporate Social Responsibility Disclosure Index

There is a significant relationship of CSR disclosure (CSR_I) with TE	Ohene-Asare and Asmild (2012); Zhu et al. (2017); Belasri et al. (2019)	Forgione, Laguir, &Stagiano, (2020); Fahad and Busru (2021)
There is a significant relationship of CSR disclosure (CSR_I) with ROA	Wu and Shen (2013); Charumathi and Ramesh (2017); Ashraf et al. (2017); Mravljia (2017); Gangi et al. (2018); Mahmood and Malik (2018); Maqbool and Zameer (2018); Selcuk (2019); Alipour et al. (2019); Szegedi et al. (2020); Alareeni and Hamdan (2020)	Taskin (2015); Moslemany and Etah (2017); Oyewumi et al. (2018)

**Market Structure Factors**

There is a significant relationship of concentration ratio with TE	Bain (1956);Shepherd (1982); Demsetz (1973); Maudos and de Guevara (2007); Chan and Karim (2010); Raphael (2013); Shawtari et al. (2015); Phan et al. (2016); Sufian et al. (2016)	Hicks (1935); Berger and Hannan (1998); Sathye (2001); Naceur et al. (2009); Tan and Floros (2013); Phan (2015); Abbas et al. (2016); Lin et al. (2016)
There is a significant relationship of concentration ratio with ROA	Athanasoglou et al. (2006); Samad (2008); Naceur and Kandil (2009); Sufian and Habibullah (2010); Naceur and Omran (2010);Islam and Nishiyama (2016); Niklas and Rasmus (2016); Aziz and Knutsen (2019)	Williams (2003); Naceur and Omran (2010); Wu and Shen (2013); Uddin and Suzuki (2014); Ujah et al. (2017); Doumposa et al. (2017); Yao et al. (2018)

**Institutional Factors**

There is a significant relationship of EFIHF/GCI with TE	Chen (2009); Naceur et al. (2009); Sufian and Habibullah (2010); Mamatzakis et al. (2013); Chortareas et al. (2013); Anwar et al. (2014); Chan and Karim (2016)	Asma and Hadeel (2017); Emmanuel et al. (2017)
There is a significant relationship of EFIHF/GCI with ROA	Aziz and Knutsen (2019); Arias et al. (2019); Bitar et al. (2018); Shahabadi and Samari (2013); Sufian and Habibullah (2010); Gwartney and Lawson (2003); Low et al. (2010); Mavrakana & Psillaki (2019);Chan, Koh, and Zainir (2015); Doumposa et al. (2017); Asteriou et al. (2021)	Naceur and Omran (2010)

## **2.9. Theoretical Framework**

This study proposed two theoretical frameworks (i) to examine the influence of bank-specific, corporate governance, market structure, institutional and environmental factors on the performance; (ii) to examine the moderating role of financial reporting quality on independent-dependent variables.



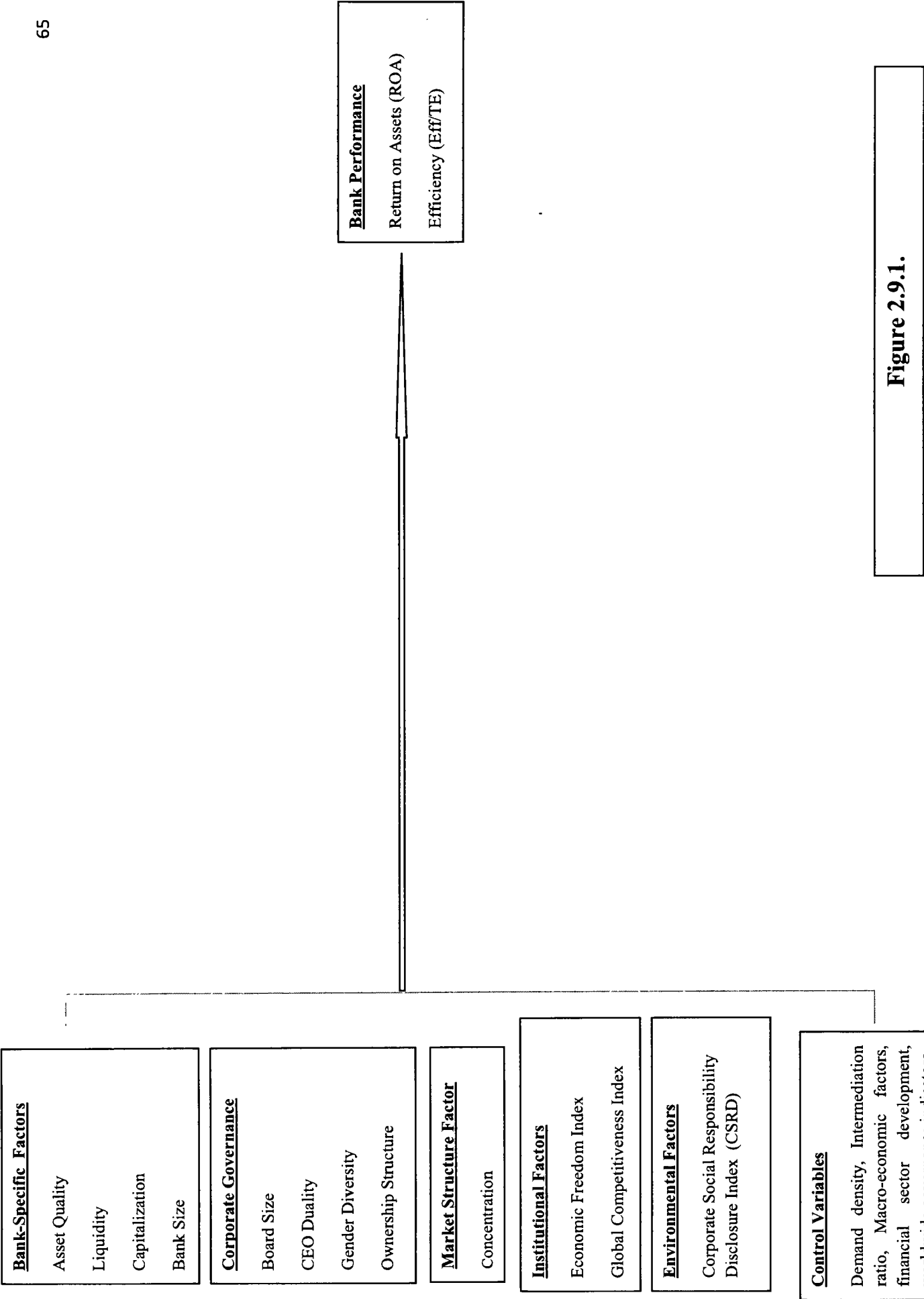


Figure 2.9.1.

Corporate Governance  
Board Size  
CEO Duality  
Gender Diversity

Environmental Factors  
Corporate Social Responsibility Disclosure  
Index (CSRDI)

Moderating Variable  
Financial Reporting Quality

Bank Performance  
Return on Assets (ROA)  
Efficiency (Eff/TE)

Figure 2.9.2.

## CHAPTER 03

### 3. Research Design and Methodology

The research design of this study covers population and sample, data mining, data collection methods, methodology, measurement of explained and explanatory variables, statistical equations, and estimation techniques used for the analysis.

#### 3.1. Population and Sample of Region and Countries

All commercial banks that fall under the ambit of the Asia-Pacific region are a population of this study. Asia-Pacific region is selected as it is the most populous and fastest economic growing region worldwide, with economic growth of 8.04% compared to world GDP growth of 2.5%. The analysis indicates that five out of the ten most populous and emerging economies were placed in 2017 (Key Indicators for Asia and Pacific Region, 2018). The economic freedom index issued by the Heritage Foundation classified the world into five regions, elucidating each region's characteristics, is placed in Table-2 (a). The index shows that the Asia-Pacific region is the most populous with 4100 million people and rapid economic growth of 6.1 % compared to the other regions of the world. The justification for selecting this region is well explained in Table-2 (a) and Graphs-1 (a & b).

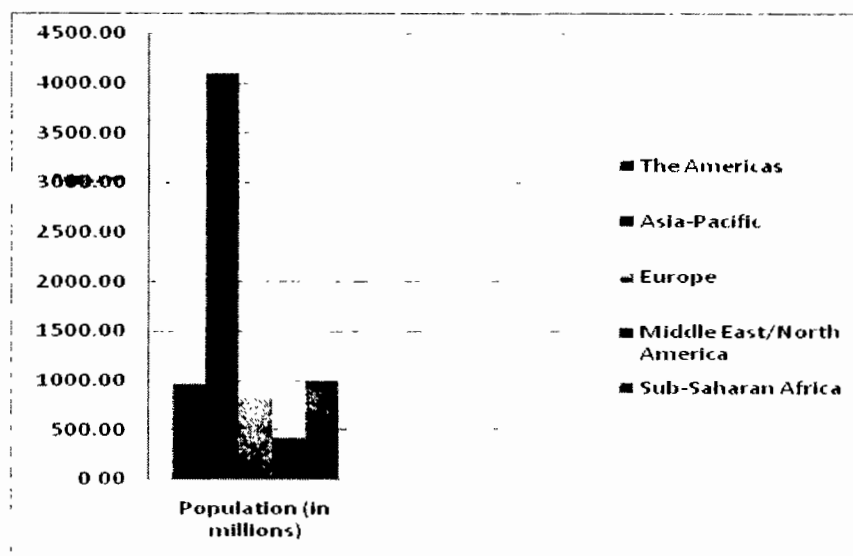
**Table-2 (a). Criteria for Selection of the Region**

<b>Regions</b>	<b>Population (Million)</b>	<b>GDP Growth Rate (%)</b>	<b>Inflation (%)</b>	<b>Unemployment (%)</b>	<b>Public Debt (%)</b>
The Americas	965.40	1	8.3	5.9	71
<b>Asia-Pacific</b>	<b>4100.00</b>	<b>6.1</b>	<b>3.3</b>	<b>4.3</b>	<b>56.2</b>
Europe	823.00	0.5	6.2	9.1	66.3
Middle East/North America	412.60	0.2	9.1	10.7	47.1
Sub-Saharan Africa	990.80	4.5	6.5	7.7	42.1

Note: (Economic Freedom Index by Heritage Foundation, 2017)

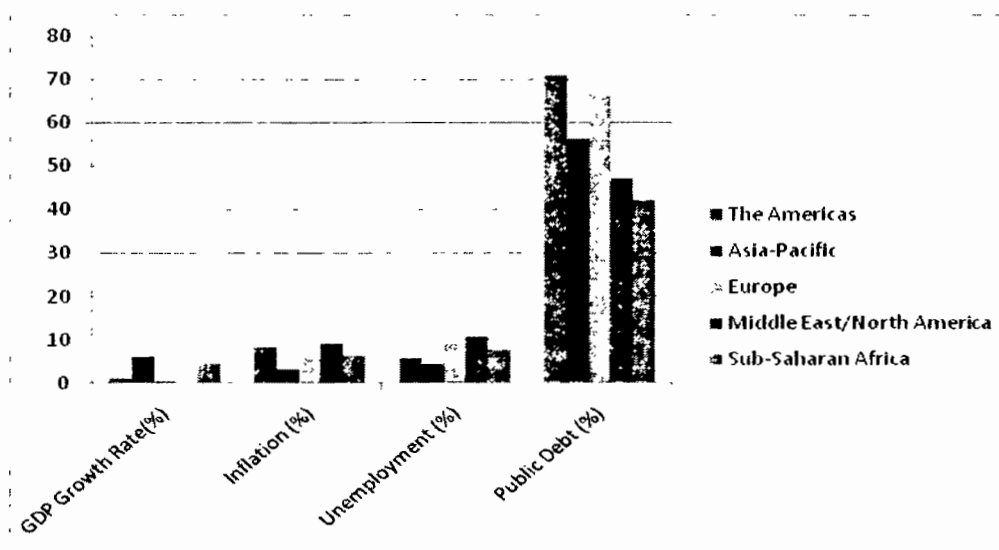
These graphs justified the selection of this region as it is the most populations, rapidly growing, less inflated, less unemployed, and has average public debt as a percentage of GDP (Economic Freedom Index by Heritage Foundation, 2017).

Graph-1 (a)



Note: (Economic Freedom Index by Heritage Foundation, 2017)

Graph-1 (b)



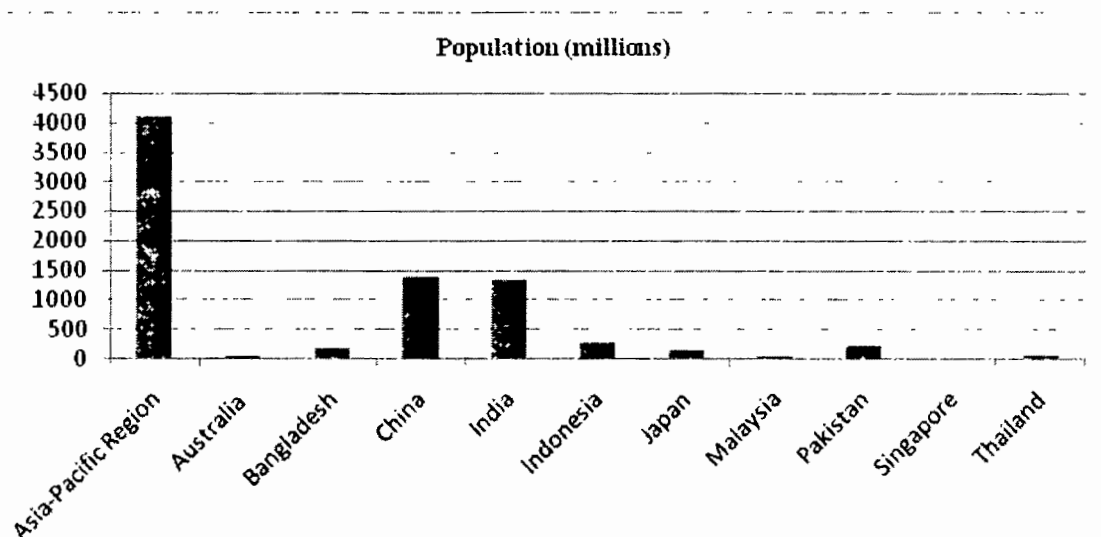
Note: (Economic Freedom Index by Heritage Foundation, 2017)

The study takes the sample of 10 chosen economies from the region such as Pakistan, Bangladesh, India, Indonesia, China, Malaysia, Thailand, Australia, Singapore, and Japan. These countries are selected as it covers almost more than 80% population of the region. The table and graph of the population (in millions) of these countries are given below that justified their selection.

**Table-2 (b). Criteria for Selection of the Countries in the Asia-Pacific Region**

Country Name	Population (millions)
Pakistan	207.897
Bangladesh	159.67
India	1338.659
Indonesia	264.646
Malaysia	31.105
Thailand	69.21
China	1386.395
Australia	24.602
Singapore	5.612
Japan	126.786
Sum	3614.582
Asia-Pacific Region	4100
Percentage	88

Note: (Economic Freedom Index by Heritage Foundation, 2017)

**Graph-2**

Note: Graph 2 indicates that the countries included in the study almost covered 88 % population of the entire region (Economic Freedom Index by Heritage Foundation, 2017).

The tables and graphs of the trend analysis of ten countries of Asia-Pacific covering six years from the period 2013 to 2018 with respect to demographic factors (population density), macro-economic factors (GPD growth rate, inflation rate, unemployment, public debt as a percentage of GDP), financial sector development (banking sector development and stock market development as a percentage of GDP), Economic, Political, and Governance Structures (economic freedom index, global competitiveness index, worldwide governance indicators ) are placed at Annex-V and Graph-4.

The developing country like Pakistan has been selected as it is one of the most densely populated areas in South Asia and faces numerous challenges. It is plagued with weak institutional and regulatory frameworks, poor accountability processes or mechanism, judicial system is flawed by prevalent issues. These issues include dishonesty, threats, large backlog of cases, long delays in the court decisions on corruption cases, the politicians/bureaucrats are facing serious allegations of bribery, extortion, cronyism, nepotism, graft, and embezzlement, excessive state or politicians interference in financial sector, capital markets are undermined, male dominance society, no mandatory laws for gender diversity etc (Economic Freedom Index, 2019). The above factors motivate us to conduct a comprehensive empirical research in the banking sector to understand that how these factors influence the bank performance in the context of emerging economy like Pakistan.

### **3.2. Population and Sample of Banks**

The study used a non-probability sampling technique to meet the research objectives. However, due to constraints such as time, budget, data issues, and geographic distances, it was not possible to collect data from the entire population of the banking sector of the Asia-Pacific region. Therefore, in this study, a sample of 175 commercial banks was taken from the ten chosen economies of the Asia-Pacific region from 2013 to 2018 to mitigate the issues of sample size and time period. The sample contains enough information to address the research question and provides insights on the theoretical foundation (Saunders et al., 2003).

This study concentrated only on commercial banks as the services provided by the banks are reasonably homogenous and comparable across countries. The other financial institutions, such as central banks, investment banks, securities houses, government banks, regional banks, rural banks, and specialized government financial institutions, are excluded due to their different nature and service delivery. The sample is chosen by adopting the convenient sampling method based on the provision and sufficiency of information for 2013-2018 from the bank'scope database. Moreover, non-probability sampling is used as the complete frame of the population was not available. The data were checked thoroughly to treat missing values, inconsistencies, and reporting errors appropriately. The listed banks are considered the population of our study, followed by Naceur et al. (2009). The detail for selecting banks among the ten selected countries is placed in Table-2(c). However, the detail of the sample size of banks selected from different countries and names is placed in Table-12.

Table-2 (c). Criteria for Selection of banks in Countries of Asia-Pacific Region

Summary	Total Banks in BankScope Database (Population)			Total Commercial Banks in Bankscope data			Banks (Data of all variables available) (Sample)		
	Listed	Unlisted	Total	Listed	Unlisted	Total	Listed	Unlisted	Total
Pakistan	20	5	25	18	2	20	17	1	18
Bangladesh	29	14	43	26	8	34	24	2	26
India	37	14	51	35	10	45	23	2	25
Indonesia	42	59	101	35	35	70	26	6	32
Malaysia	15	20	35	10	16	26	10	1	11
Thailand	14	11	25	14	4	18	14	0	14
China	50	176	226	35	103	138	23	8	31
Australia	10	12	22	10	8	18	10	6	16
Singapore	4	7	11	3	0	3	3	0	3
Japan	67	34	101	67	29	96	29	0	29
<b>Total</b>	<b>288</b>	<b>352</b>	<b>640</b>	<b>253</b>	<b>215</b>	<b>468</b>	<b>179</b>	<b>26</b>	<b>205</b>
<b>%age</b>							<b>71</b>	<b>7</b>	<b>32</b>

Note: Four banks named Askari bank from Pakistan, Basic Bank, Midland Bank from Bangladesh, and Bank of China from Thailand are excluded due to extreme values by using cook distance. The graphs of cook distance are shown on Page No. 211-224. So, the sample size of the banks was reduced to 175 instead of 179.

### 3.3. Data Mining

The process or steps followed to select the banks from the ten countries of Asia-Pacific region:

- Download all the information related to commercial banks of ten countries of the Asia-Pacific region from the bankscope database (population of study).
- Bankscope categorizes the banks as listed and unlisted. Only listed banks were taken in this study. The unlisted banks are excluded as most information about factors was missing in the bank scope database. Further, the annual reports of unlisted banks were also not available on the bank website.
- Only commercial banks from the listed banks were taken from bankscope database.
- Similarly, all those banks that have not downloaded annual reports from their websites and other sources were excluded.
- All those banks that have incomplete financial information and missing values were excluded.

- (f) Only banks with complete information related to variables used in the study such as asset quality, liquidity, capital ratio, bank size, governance, CSR disclosure, and financial reporting quality were available.

### **3.4. Data Collection Procedure**

#### **3.4.1. Sources for collection of Information**

This data collected information about different variables at two levels, i.e., bank and country levels.

- a- **Bank-Specific Factors:** This study gathered banks' specific data (asset quality, liquidity, capital adequacy ratio, bank size, corporate governance, CSR disclosure, financial reporting quality) from bankscope, central banks of different countries, individual banks websites, annual reports, and sustainability report.
- b- **Country-Specific Factors:** This study collected market structure, institutional, macro-economic, market, and financial structure-related data (concentration, economic freedom index, GDP, Inflation, banking, and stock market development, demographic, etc.) from Economic Freedom Index issued by Heritage Foundation, World Economic Outlook, World Development indicator database, Worldwide Governance Indicators, Key indicator for Asia and Pacific Region.

### **3.5. Methodology**

The study investigated the impact of multiple factors on bank performance by applying three techniques: panel estimation, GMM estimation, and quantile regression, by taking data from 175 commercial banks from ten countries in the Asia-Pacific region.

#### **3.5.1. Variables Description, its Measurement, and Literature Support**

This section tells us how to measure variables. It comprises exogenous variables, endogenous variables, moderators, and control variables. The variable choice in the study is based on the literature review to align them with the past research. The detail is placed in Table-3.



**Table-3. Variables Description, Abbreviations, Measurement, and Literature Support**

S. No.	Description	Symbols	Formulas	Literature Support
1	Asset Quality	BNPL	Non-Performing Loans/Total Loans	Berger and De Young (1997); Batir et al. (2017); Aziz and Knutsen (2019)
2	Liquidity	Bdep	Deposit/Total Assets	Batir et al. (2017); Phan et al. (2018); Rodney and Jing (2018)
3		Bloans	Loans(Advances)/Total Assets	Sufian and Habibullah (2010) in Thailand; Batir et al. (2017); Yao et al. (2018)
4	Capital Adequacy	BCAR	Shareholders' Equity/Total Assets	Sufian and Habibullah (2010) in Thailand; Batir et al. (2017); Zheng et al. (2017); Yao et al. (2018); Aziz and Knutsen (2019)
5	Bank Size	BBS	LN(Total Assets)	Sufian and Habibullah (2010) in Thailand; Hasanul et al. (2017); Batir et al. (2017); Zheng et al. (2017); Yao et al. (2018); Aziz and Knutsen (2019)
6	Board Size	BoDs	LN(Total number of board members)	Maria and Sanchez (2010); Salim et al. (2016); Mollah and Zaman (2015); Conyon and He (2017); Riyadh et al. (2019)
7	CEO Duality	CEO D	1 if CEO/Chairman are different persons and 0 otherwise	Maria and Sanchez (2010); Arora and Sharma (2016); Conyon and He (2017)
8	CEO Women	CEO W	1 if the CEO of the bank is a female and 0 otherwise	Ghosh (2017); Conyon and He (2017); Mohammad et al. (2018)
9	Percentage of women on board	WTI	% of women on board	Maria and Sanchez (2010); Conyon and He (2017); Mohammad et al. (2018); Riyadh et al. (2019)
10	Ownership Structure	OS	%age of shares owned by foreign shareholders/ total # of shares issued	Sufian and Habibullah (2010) in Thailand; Hasanul et al. (2017); Mamatzakis et al. (2017); Jayati and Subrata (2018)
11	CSR disclosure Index	CSR_I	CSR score = sum of CSR items/ Total number of CSR items. "1" discloses CSR items and "0" otherwise	Keffas and Olulu-Briggs (2011); Wu and Shen (2013); Zhu et al. (2017); Suteja et al. (2016); Oyewumi et al. (2018)
12	Concentration Ratio	CR	TAs of the largest three banks/TAs of the whole banking industry. It ranges from 0 to 100.	Sufian and Habibullah (2010) in Thailand; Wu and Shen (2013); Shawtari et al. (2015); Aziz and Knutsen (2019)
13	Economic Freedom Index	EFIHF	It includes the rule of law, government size, regulatory efficiency, and market openness. Its value lies between 0-100.	Chan and Karim (2016); Aziz and Knutsen (2019); Arias et al. (2019)

14	Global Competitiveness Index	GC_I	It includes the basic requirements index; efficiency enhances index, innovation, and sophistication index. Its value ranges from 0 to 7.	Chan and Karim (2016); Aziz and Knutsen (2019)
15	Financial Reporting Quality	FRQMV	Loan Loss Models are used as a proxy to measure earning management.	Hassan and Wall (2003); Curcio and Hasan (2015); Ujah et al. (2017)
		FRQMV	Moderator Variable	Rahmawati and Dianita (2011); Kang and Kim (2011); Suteja et al. (2016); Latif et al. (2018)
16	Return on Assets	ROA_A	Net Income/Total Assets	Wu and Shen (2013); Conyon and He (2017); Aziz and Knutsen (2019)
17	Data Envelopment Analysis	Eff/TE	Inputs: deposits, interest on deposits, fixed assets, share capital Outputs: total loans, interest on loans, net income	Sufian and Habibullah (2010) in Thailand; Abbas et al. (2016); Batir et al. (2017)
18	<b>Control Variables</b>			
	Demographic	DD	Demand density (total deposits of banking sector/total area) (% of GDP)	Dietsch and Lozano-Vivas (2000)
	Stock market development	SMD	Stock market capitalization/GDP	Tan and Floros (2013); Sufian and Habibullah (2010) in Thailand
	Banking Sector Development	FDCP	Private credit by deposit money bank to GDP (%)	Tan and Floros (2013); Yao et al. (2017)
		FDLL	Liquid liabilities to GDP(%)	
		FDA	Deposits money bank assets to GDP (%)	
	Intermediation Ratio	BIR	Loans/Deposits	Zheng et al. (2017)
	Gross Domestic Product	GDP	Annual GDP growth rate	Sufian and Habibullah (2010) in Thailand and Malaysia; Batir et al. (2017)
	Inflation	Inf	Annual inflation rate	Sufian and Habibullah (2010) in Thailand and Malaysia; Batir et al. (2017)
	Unemployment (% of GDP)	Unemp	Percentage of GDP	
	Worldwide Governance Indicators	WWGA	It includes voice and accountability, political stability, government effectiveness, regulatory quality, and control of corruption.	Naceur et al. (2009); Chortareas et al. (2013)

Its value ranges from -  
2.5 to 2.5

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Note: The table exhibits the variable description, symbols, measurements, and the previous scholars used these variables in their studies. However, the variables such as a corporate social responsibility disclosure index, economic freedom index, global competitiveness index, financial reporting quality, and efficiency (data envelopment analysis) are discussed in section 3.5.2.

### **3.5.2. Defining Variables**

Few of the variables used in the study are explained in this section.

#### **3.5.2.1. Corporate Social Responsibility Disclosure Index**

Literature exhibits the methods to measure corporate social responsibility disclosure Index such as (1) use of reputation indices like Dow Jones Sustainability Index, ESG, Asset4, EIRIS, etc., (2) content analysis (3) Surveys. This study used content analysis to collect information related to the CSR disclosure index checklist from individual banks' annual/sustainability reports, websites, etc. The checklist is based on the ESG model (Environment, Social, and Governance) prepared in the previous literature. This study used the dichotomous and unweighted disclosure index method as used by Saleh, Zulkifli and Muhamad (2010), Wu and Shen (2013); Djalilov, Vasylieva, Lyeonov and Lasukova (2015), Taskin (2015), Wu et al. (2017); Moslemany and Etab (2017), Gangi et al. (2018), Maqbool and Zameer (2018), Riyadh et al. (2019). The banks that disclosed CSR dimensions in their annual reports or websites scored one, and otherwise, they were assigned zero scores. The corporate social responsibility disclosure items summary is placed in Table-3 (a). The formula used to calculate the CSR disclosure Index is as under:

$$\text{CSR Disclosure Index} = \text{Sum of CSR items} / \text{Total number of CSR items}$$

**Table-3 (a). Summary of CSR Disclosure items based on Previous Literature**

“1” if CSR is reported in the annual/sustainability report and “0” otherwise

<b>Symbols</b>	<b>Description of CSR items</b>
CRG	CSR- Reporting
CCG	CSR-Sustainable/CSR Committee-G
CSEG	CSR-Stakeholders Engagement
CNPG	CSR-National Policies-G
CGA	CSR-Accreditation of an international organization
CCEG	CSR-S_Ethics_Code of Conduct and Ethics
CCAMLG	CSR-S_Ethics_AML/KYC Policy- S
CCGG	CSR-S_Ethics_Grievance Redressal Policy
CSDG	Common forum for dialogue
CSIG	Other Information disclosure
CEWS	CSR_Employees Well Being
CCPS	CSR_Customer Privacy Policy
CPAS	CSR-Philanthropic Activities Description
CDonS	CSR_Donations
CNRE	CSR-E_Natural Resources(N)
CDE	CSR-E_Digitalization
CEDDE	CSR-E_Incorporation of Environmental Risk before lending (Environmental Due Diligence)
CGFE	CSR-EAC_Green Financing
CSRIndex	CSR Index

### 3.5.2.2. Institutional Factors

The proxy used to measure institutional factors is the economic freedom index (EFI) issued by Heritage Foundation and the global competitiveness index (GC\_I) issued by World Economic Forum. The scholars who used these proxies to determine the bank performance include Chan and Karim (2016); Aziz and Knutsen (2019). Economic Freedom Index is categorized into four sub-indices: the rule of law, size of the government, regulatory efficiency, and market openness. Its values lie between 0-100.

**Table-3 (b). Economic Freedom Index (0-100)**

S. #	Variables	Dimensions
1	Rule of Law	Property rights, <b>Judicial effectiveness</b> , government integrity
2	Government Size	Tax Burden, Government Spending, Fiscal Health
3	Regulatory Efficiency	Business Freedom, Labor Freedom, Monetary Freedom
4	Market Openness	Trade Freedom, Investment Freedom, Financial Freedom

Global Competitiveness Index comprises three sub-indexes: basic requirements, efficiency enhancers, and innovation and sophistication. Its values range from 1 to 7.

**Table-3(c). Global Competitiveness Index (score ranges from 1 to 7)**

S. #	Variables	Sub-Variables
1	Basic Requirements Index	Institutions
		Infrastructure
		Macro-economic Environment
		Health and Primary Education
		Higher Education and Training
2	Efficiency Enhancers Index	Goods market efficiency
		labour market efficiency
		financial market development
		technological readiness
3	Innovation and Sophistication factors subindex	market size
		Business sophistication
		Innovation

### 3.5.2.3. Earning Management as a Proxy for Financial Reporting Quality

Earning management depends on the selection of accounting techniques and accruals-based management. Literature states that accrual-based management is preferred over other approaches. It represents the choice of accounting methods and recognizes the timing of revenues and expenses (matching principle), assets written down, and changes in accounting estimates. The scholars favouring discretionary accruals argue that non-discretionary accruals are excluded as they are beyond management's control and reflect business conditions. On the other side, discretionary accruals indicate the intervention of management in the financial

reporting process. Various models are available in the literature to measure the earning management, such as the Healey model, the DeAngelo model, the Jones model, the modified Jones model, and the growth model. The modified Jones model developed by Dechow et al. (1995) is extensively used to calculate the firms' discretionary accrual. However, these models are applied to those firms where the nature of the business is sales-based (Beaver and Engel, 1996). However, in the case of financial institutions, loan loss models are widely used to measure earning management where the managers have the power to manipulate the LLPs/LLR. Hassan and Wall (2003) used two loan loss models such as loan loss provision (LLP) and loan loss reserves or allowances (LLA/LLR), as a proxy to measure earning management in banks. The difference between both models is that the former considers bank accruals from income statements, while the latter comes from the balance sheet. This study followed the loan loss reserve model (LLR/LLA) of Hassan and Wall (2003) and Ujah, Brusa, and Okafor (2017). Alhadab and Al-Own (2017) used discretionary accruals (loan loss models) to measure earning management in the banking sector. Wicaksana, Yuniasih, and Handayani (2017) used discretionary accruals as a proxy to measure earning management.

$$LLA_{it} = a_0 + \sum(\beta_1 NDjit + \beta_2 Djit) + \epsilon_{it}$$

$$LLA_{it} = a_0 + \beta_1 NPL_{it} + \beta_2 NCO_{it} + \beta_3 LOAN_{it} + \beta_4 EQUITY_{it} + \beta_5 NetIncome_{it} + \epsilon_{it}$$

$$\frac{LLA_{it}}{Assets_{it}} = a_0 \frac{1}{Assets_{it}} + \beta_1 \frac{NPL_{it}}{Assets_{it}} + \beta_2 \frac{NCO_{it}}{Assets_{it}} + \beta_3 \frac{LOAN_{it}}{Assets_{it}} + \beta_4 \frac{EQUITY_{it}}{Assets_{it}} + \beta_5 \frac{Net Income_{it}}{Assets_{it}} + \epsilon_{it}$$

Where  $LLA_{it}$  represents loan loss allowance/reserves for bank i at time t,

$NPL_{it}$  indicates non-performing loans for bank i at time t,

$NCO_{it}$  shows net charge off/uncollectible loans for bank i at time t,

$LOAN_{it}$  depicts total loans for bank i at time t,

$EQUITY_{it}$  exhibits shareholders equity for bank i at time t,

$NetIncome_{it}$  denotes net income for bank i at time t,

$\epsilon_{it}$  represents residuals/error term

The residuals stem out after running the regression is used as an indicator of the quality of the financial reporting. These residuals indicate a bank-specific measure of financial reporting quality. Absolute values of error terms are used. The higher value of the residuals is an indicator of lower financial reporting quality, whereas; the lower value of the residuals represents the higher financial reporting quality.

#### **3.5.2.4. Performance of the Banking Sector**

This study used accounting and efficiency approaches to measure bank performance, followed by Uddin and Suzuki (2014). Further, ROA and DEA (two-stage) intermediation approach with VRS is used. DEA (two-stage) approach indicates that the efficiency scores are obtained initially. Then these scores are used as dependent variables to recognize the efficiency factors by applying the regression analysis. This approach compares DMUs and presents an efficiency score for each unit. The efficiency scores range from zero to one (0-1). The previous scholars who widely used DEA to measure bank efficiency with an intermediation approach include Casu and Molyneux (2003) in Europe, Sathye (2005) in the Asia-Pacific region, Barry et al. (2008) in the Asia-Pacific region, Pasiouras (2008), Sufian and Habibullah (2010) in Thailand, Chan and Heang (2010) in Malaysia, Ardianty and Viverita (2011) in Indonesia, Anil et al. (2012) in Indian banks, Barth et al. (2013), Saha et al. (2015) in Malaysia, Iveta (2015) in Czech Republic, Dharmendra and Bashir (2015) in Oman, Sufian et al. (2016) in Malaysia, Soba et al. (2016), Alharthi (2016), Abbas et al. (2016), Batir et al. (2017) in Turkey, Hasanul et al. (2017) in Bangladesh, Alqahtani et al. (2017) in GCC.

This study used the intermediation approach to select inputs and outputs for efficiency analysis. This approach states that the bank acts as financial intermediaries accepting deposits and lending them to investors (Sealey & Lindley, 1977). This study took deposits, interest on deposits, fixed assets, and share capital as input and produced output in terms of total loans, interest on loans, and net income.

**Table-3 (d).Input and Output Selection**

S. No.	Dimension	Variables Name	Literature Support
1	Input	Deposits	Casu and Molyneux (2003); Havrylchyk (2006) in Poland; Sufian and Habibullah (2010); Ardianty and Viverita (2011); Raphael (2013); Barth et al. (2013); Rosman et al. (2014); Iveta (2015); Sufian et al. (2016); Soba et al. (2016); Majid and Zanib (2016); Abbas et al. (2016); Batir et al. (2017); Hasanul et al. (2017); Alqahtani et al. (2017); Abdul-Hamid et al. (2017); Henriquesa et al. (2018); Islam and Kassim (2015); Dharmendra and Bashir (2015); Alharthi (2016)
		Interest expense on Deposits	Raphael (2013); Soba et al. (2016); Hasanul et al. (2017)
		Fixed Asset	Havrylchyk (2006) in Poland; Sufian and Habibullah (2010); Barth et al. (2013); Rosman et al. (2014); Sufian et al. (2016); Majid and Zanib(2016); Abbas et al. (2016); Batir et al. (2017); Abdul-Hamid et al. (2017); Henriquesa et al. (2018); Dharmendra and Bashir (2015) ; Alharthi (2016)
		Shareholder Capital/Equity	Majid and Zanib(2016); Alharthi (2016)
2	Output	Loans and Advances	Casu and Molyneux (2003); Havrylchyk (2006); Sufian and Habibullah (2010); Ardianty and Viverita (2011); Raphael (2013);Barth et al. (2013); Rosman et al. (2014); Iveta (2015); Sufian et al. (2016); Soba et al. (2016); Majid and Zanib (2016); Abbas et al. (2016); Batir et al. (2017); Hasanul et al. (2017); Alqahtani et al. (2017); Abdul-Hamid et al. (2017); Henriquesa et al. (2018); Islam and Kassim (2015); Dharmendra and Bashir (2015); Alharthi (2016)
		Interest Income on Loans	Soba et al. (2016); Hasanul et al. (2017); Raphael (2013)
		Net Income	Abdul-Hamid et al. (2017); Alharthi (2016)

### 3.6. Model Specification

There are numerous types of multiple regression analysis such as standard, hierarchical, stepwise, etc. This study performed an empirical analysis using stepwise multiple/multivariate regressions analysis (Alareeni and Hamdan, 2020; Belasri et al., 2019; Aziz and Knutsen, 2019; Jayati and Subrata, 2018; Yao et al., 2018; Ghosh, 2017). The former permits scholars to investigate the association between the explained variable and one or more explanatory variables. Secondly, multivariate analysis is used for estimating a regression model when there is more than one dependent variable. This study used banks'



profitability and efficiency as explained variables. The study tested the following assumptions of multiple regressions: normality by Jarque-Bera test, multicollinearity by correlation analysis/variance inflation factor, and homoscedasticity by Breusch-Pagan test. Several tests, such as cook distance, are used to check the outliers in the study. Furthermore, we also examined the role of FRQ as a moderating variable in the model. The following models are used to check the hypothesis of this study:

### 3.6.1. Multiple Regression Model

The following econometric models by using step by step multiple regression analysis is used to investigate the individual/joint impact of explanatory variables such as bank-specific factors, corporate governance, environmental factors, market structure, and institutional factors on bank performance, as measured by return on asset (ROA) and efficiency (Eff/TE), as written below.

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 \sum Controls + \mu_t \text{-----} (1a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 \sum Controls + \mu_t \text{-----} (1b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 BoDs_{i,j,t} + \beta_2 CEOD_{i,j,t} + \beta_3 CEOW_{i,j,t} + \beta_4 WTI_{i,j,t} + \beta_5 OS_{i,j,t} + \beta_6 \sum Controls + \mu_t \text{-----} (2a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 BoDs_{i,j,t} + \beta_2 CEOD_{i,j,t} + \beta_3 CEOW_{i,j,t} + \beta_4 WTI_{i,j,t} + \beta_5 OS_{i,j,t} + \beta_6 \sum Controls + \mu_t \text{-----} (2b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 CSR\_I_{i,j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (3a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 CSR\_I_{i,j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (3b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 CR_{j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (4a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 CR_{j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (4b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 EFIHF_{j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (5a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 EFIHF_{j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (5b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 GC_{I,j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (6a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 GC_{I,j,t} + \beta_2 \sum Controls + \mu_t \text{-----} (6b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} \sum Controls + \mu_t \text{-----} (7a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} \sum Controls + \mu_t \text{-----} (7b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} CR_{j,t} + \beta_{13} \sum Controls + \mu_t \text{-----} (8a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} CR_{j,t} + \beta_{13} \sum Controls + \mu_t \text{-----} (8b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} EFIHF_{j,t} + \beta_{13} \sum Controls + \mu_t \text{-----} (9a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} EFIHF_{j,t} + \beta_{13} \sum Controls + \mu_t \text{-----} (9b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} CR_{j,t} + \beta_{13} EFIHF_{j,t} + \beta_{14} \sum Controls + \mu_t \text{-----} (10a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR_{I,j,t} + \beta_{12} CR_{j,t} + \beta_{13} EFIHF_{j,t} + \beta_{14} \sum Controls + \mu_t \text{-----} (10b)$$

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR\_I_{i,j,t} + \beta_{12} CR_{j,t} + \beta_{13} GC\_I_{j,t} + \beta_{14} \sum Controls + \mu_t \text{-----} \quad (11a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loan_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR\_I_{i,j,t} + \beta_{12} CR_{j,t} + \beta_{13} GC\_I_{j,t} + \beta_{14} \sum Controls + \mu_t \text{-----} \quad (11b)$$

### 3.6.3. Financial Reporting Quality as a moderator

The econometric model used in the study to examine the moderating effect of financial reporting quality is written as below:

$$ROA_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loans_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR\_I_{i,j,t} + \beta_{11} CR_{j,t} + \beta_{12} EFIHF_{j,t} + \beta_{13} FRQMV_{i,j,t} + \beta_{14} FRQMV.BoDS_{i,j,t} + \beta_{15} FRQMV.CEOD_{i,j,t} + \beta_{16} FRQMV.WTI_{i,j,t} + \beta_{17} FRQMV.CSR\_I_{i,j,t} + \beta_{18} \sum Controls + \mu_t \text{-----} \quad (12a)$$

$$Eff(TE)_{i,j,t} = \alpha_0 + \beta_1 NPL_{i,j,t} + \beta_2 Deposit_{i,j,t} + \beta_3 Loans_{i,j,t} + \beta_4 CAR_{i,j,t} + \beta_5 Size_{i,j,t} + \beta_6 BoDS_{i,j,t} + \beta_7 CEOD_{i,j,t} + \beta_8 CEOW_{i,j,t} + \beta_9 WTI_{i,j,t} + \beta_{10} OS_{i,j,t} + \beta_{11} CSR\_I_{i,j,t} + \beta_{11} CR_{j,t} + \beta_{12} EFIHF_{j,t} + \beta_{13} FRQMV_{i,j,t} + \beta_{14} FRQMV.BoDS_{i,j,t} + \beta_{15} FRQMV.CEOD_{i,j,t} + \beta_{16} FRQMV.WTI_{i,j,t} + \beta_{17} FRQMV.CSR\_I_{i,j,t} + \beta_{18} \sum Controls + \mu_t \text{-----} \quad (12b)$$

Where,

i stands for individual banks; j stands for a country name, and t denotes for time period

*Bank Performance*<sub>i,j,t</sub> = Return on Assets (ROA) and Efficiency (Eff/TE)

*BNPL*<sub>i,j,t</sub> = Non-Performing Loans to total loans

*BLoan*<sub>i,j,t</sub> = Loans to total asset ratio

*BDeposits*<sub>i,j,t</sub> = Deposits to total asset ratio

*BCAR*<sub>i,j,t</sub> = Capital Ratio

*BBS*<sub>i,j,t</sub> = Bank Size

*BoDs*<sub>i,j,t</sub> = Board of Directors Size

$CEOD_{i,j,t}$  = CEO Duality

$CEOW_{i,j,t}$  = CEO Women

$Wti_{i,j,t}$  = Percentage of women into board (Tokensim or Key Influencers)

$OS_{i,j,t}$  = Ownership Structure

$CSR\_I_{i,j,t}$  = Corporate Social Responsibility Disclosure Index

$CR_{j,t}$  = Concentration Ratio

$EFIHF_{j,t}$  = Economic Freedom Index issued by Heritage Foundation

$GC\_I_{j,t}$  = Global Competitiveness Index

#### ***Moderating Variable***

$FRQMV_{i,j,t}$  = Financial Reporting Quality, as measured by earning management

#### ***Control Variables***

$D_{i,j,t}$  = demand density

$BIR_{i,j,t}$  = Intermediation Ratio

$BSSMD_{j,t}$  = Banking Sector and Stock Market Development

$GDP_{j,t}$  = Gross Domestic Product

$Inf_{j,t}$  = inflation

$WWGA_{j,t}$  = Worldwide Governance Indicators – Voice and Accountability

$Unemp_{j,t}$  = Unemployment

$\mu_t$  = Error Term

### **3.7. Estimation Techniques**

This study used panel data estimation techniques (static and dynamic) and quantile regression. Panel data is used as it has many benefits over cross-sectional or time-series data (Hsiao, 1986). The first of these benefits is that the use of panel data enables researchers to address the issue of individual heterogeneity. However, the time-series and cross-sectional data do not address this issue and resultantly get biased estimates. Secondly, it provides more information and variation in the data, collinearity is less among the variables, and the degree of freedom is more alongwith more efficiency. Thirdly, cross-sectional distributions show

stability but conceal several changes. Fourthly, it is more suitable to recognize and determine the effects not detected in other data types.

Panel estimation techniques are of two types, i.e., static and dynamic. This study used static panel estimation techniques such as common, fixed, and random, whereas generalized methods of moments (GMM) are employed for the dynamic panel. Furthermore, Quantile regression is used to remove the outlier effect in the dataset as it estimates the regression based on median values instead of average. The techniques used in this study include common effect, fixed effect and random effect, GMM, and Quantile regression to assess the association of multiple explanatory variables with endogenous variables. Before and after running regression analysis, preliminary analyses were conducted to check the basic regression assumptions, such as stationary test (unit root test), normality, multi-collinearity, variance inflation factors, and heteroscedasticity.

### **3.7.1. Panel Estimation Techniques**

Initially, the common/pooled effect model (CEM), fixed effect model (FEM), and random effect model (REM) were run to assess the relationship of independent variables with bank performance. CEM showed that the intercept is the same for all countries/entities. FEM showed that all firms in the model and intercept of all the firms are different due to capital, production, etc. For REM, some selected firms are considered in the model, and the intercept of all selected firms are different due to randomness in selecting a sample from the population. The error term is divided into two parts, i.e., one is the same as in Ordinary Least Square (OLS) method following randomness (no trend), and the other term varies cross-sectionally to obtain individual intercept but remains constant over time.

Moreover, different diagnostic tests such as Breush-Pagan Lagrange Multiplier, Hausman test, and Likelihood ratio are executed to select the best model among different panel estimation techniques. Here, three hypotheses are tested to select among these models, i.e., BP Lagrange Multiplier  $H_0$ : Pooled is better than REM; (ii) Hausman  $H_0$ : REM is better than FEM; (iii) Likelihood Ratio  $H_0$ : Pooled is better than FEM. The null hypothesis of all these models is accepted or rejected based on the p-value. If the p-value is less than .05, reject  $H_0$  and vice-versa. The panel estimation techniques used by the previous scholars include Nadeem et al. (2017), Ghosh (2017), Conyon and He (2017), Varnita et al. (2018), Ajili and

Bouri (2018), Andersson and Wallgren (2018), Mahmood and Malik (2018), Arias et al. (2019), and Szegedi et al. (2020).

### 3.7.2. Generalized Method of Moments (GMM)

This study also employed the GMM estimation technique in alternative to the OLS estimation technique, initiated by Arellano-Bover/Blundell-Bond, as it controls the issue of endogeneity, unseen heteroscedasticity, and autocorrelation in its economic structure. The GMM estimator takes the lag of the endogenous variable as an explanatory variable to make the model dynamic. The Arellano and Bond (1991) estimation treats all independent variables as endogenous and uses their past values as their respective instruments. The assumption can be validated if the lagged explained variable observed a significant positive coefficient in all the models. We also took the first difference of all independent variables to remove unobserved heterogeneity. The condition for the application of GMM is (i) when the time period is shorter than the number of groups ( $T < N$ ); (ii) validity of instruments by applying the Sargan/Hansen test; (iii) absence of autocorrelation at AR (2) by applying Arellano-Bond test. The insignificant value of the Hansen test is an indicator for the instrument's validity. This implies that instruments are not correlated with residuals. Similarly, the insignificant value of AR (2) means the absence of autocorrelation in the residuals. The scholars who used the same technique in the extant literature include Pathan and Faff (2013), Mollah and Zaman (2015), Djalilov and Piesse (2016), Tan (2016), Nadeem et al. (2017), Ghosh (2017), Zheng et al., (2017), Andries et al., (2018), Yao et al. (2018), Hasanov et al. (2018), Merendino and Melville (2019), Aziz and Knutsen (2019), Fan et al. (2019) and Asteriou et al. (2021). Several scholars argued that endogeneity exists when evaluating bank performance by considering the dimensions of corporate governance, institutional and bank-specific factors (Asteriou et al., 2021, Ullah et al., 2020, Andries et al., 2018, Ionascu et al., 2018, Arnaboldi et al., 2018, Gordini and Rancati, 2017, Islam and Nishiyama, 2016, Arora and Sharma, 2016). There is uncertainty about the relationship between CSR and bank performance. Few scholars argue that CSR leads to performance, whereas others argue that performance may drive CSR. Hence, a two-way relationship exists between explained and explanatory variables. In this scenario, there is a chance that endogeneity prevails in such a relationship (Bolton, 2020).

### **3.7.3. Quantile Regression**

This study used quantile regression as it is applied when the basic assumptions of linear regression do not meet serial correlation, heteroscedasticity, and major variations present in the dataset. It differs from the classical ordinary least square(OLS)method as it predicts the association of the independent variables with the dependent variable based on median instead of conditional mean. It is preferred over other techniques as it is less prone to the influence of outliers in the data. This study applied quantile regression to an already established model.It can also be helpful as the researcher can predict outcome variables at any quantile level, such as 25<sup>th</sup>, 50<sup>th</sup>, or 75<sup>th</sup> percentile, etc. The previous scholars who used this technique include Ujah et al. (2017), Conyon and He (2017) and Bitar et al. (2018).

The summary of the estimation techniques used in the study and the scholars who used similar approaches in the past are placed in Table-3(e & f).

### **3.8. Software Used**

Finally, we used DEAP 2.1 software to find out the efficiency scores. Later on, we used E-views to assess the influence of the multiple factors on bank performance.

**Table-3 (e).Summary of Estimation Techniques Used in the Study**

Static PET	Three models such as common effect, fixed effect and random effect. The study uses following tests to select among these models. The null hypothesis of these model are as under; (i) BP Lagrange Multiplier H0: Pooled is better than REM; (ii) Hausman H0: REM is better than FEM; (iii) Likelihood Ratio H0: Pooled is better than FEM. The null hypothesis of these tests is accepted or rejected based on the p-value. If the p-value is less than .05, reject H0 and vice-versa.
Dynamic PET (GMM)	<p>To handle the issue of endogeneity, unseen heteroscedasticity, and autocorrelation in its economic structure. <b>Conditions:</b> (i) when the time period is shorter than the number of groups (<math>T &lt; N</math>); (ii) validity of instruments by applying the Sargan/Hansen test; (iii) absence of autocorrelation at AR (2) by applying Arellano-Bond test. <b>Decision:</b> The insignificant value of the Sargan/Hansen test is an indicator for the instrument's validity. This implies that instruments are not correlated with residuals. Similarly, the insignificant value of AR (2) means the absence of autocorrelation in the residuals.</p> <p>Several scholars argued that endogeneity exists when evaluating bank performance by considering the dimensions of corporate governance, institutional, bank-specific and CSR factors (Asteriou et al., 2021, Ullah et al., 2020, Andries et al., 2018, Ionascu et al., 2018, Arnaboldi et al., 2018, Bolton, 2020; Gordini and Rancati, 2017, Islam and Nishiyama, 2016, Arora and Sharma, 2016). These scholars argued that these factors lead to performance and vice-versa. Hence, two-way relationship exists b/w IVs &amp; DV</p>
Quantile Regression	Differs from classical OLS method as it is based on conditional median. It is preferred over other techniques as it is less prone to the influence of outliers in the data. This study applied quantile regression to an already established model. It tells us about the significant values of each variable at different levels of quantiles such as 25th, 50th, or 75th percentile, etc. Further, it provides information on whether the significant value of explanatory variables at lower quantile varies from that at higher quantile.

Note: The table explains the justification for the selection of different techniques used in the study.



**Table-3 (f). Similar Studies in the past using panel data estimation techniques**

<b>Authors</b>	<b>Scope</b>	<b>Methodology</b>
Aziz and Knutsen(2019)	Arab Economies	System GMM
Arias et al. (2019)	52 Countries	Common Effect, Fixed Effect and Random Effect, GMM
Riyadh et al. (2019)	Indonesia	Smart Partial Least Squares (PLS)
Fan et al. (2019)		GMM estimation techniques
Mollah and Zaman (2015)	Pakistan	GMM estimation techniques
Emma, Maria, and Beatriz (2018)		GMM estimation techniques
Ajili and Bouri (2018)	GCC Countries	Common Effect, Fixed Effect, and Random Effect
Hamdi et al. (2018)	Indonesian banks	GLS and REM
Varnita et al. (2018)	India	Pooled OLS, FEM, and REM
Maqbool and Zameer (2018)	Indian Banks	Common Effect, Fixed Effect, and Random Effect
Yao et al. (2018)		GMM Estimation
Bitar et al. (2018)	OECD	Quantile regression
Tomislava et al. (2018)	Croatian companies	GMM Estimation Techniques
Nadeem et al. (2017)	Australian Banks	Common Effect, Fixed Effect and Random Effect, GMM
Ghosh (2017)	Indian banks	Common Effect, Fixed Effect and Random Effect, GMM
Ibrahim and Rizvi (2017)	13 countries	System GMM
Zheng et al. (2017)	bangladesh	System GMM
Siddik, Kabirja and Joghee (2017)	bangladesh	Multicollinearity test(Correlation, VIF), cross-section dependence (correlation) in residuals, panel unit root test, pooled OLS, and quantile regression
Conyon and He (2017)		Common Effect, Fixed Effect, and Random Effects vs Quantile regression
Khurshid et al. (2017)	Pakistan	Common Effect, Fixed Effect, and Random Effect
Ujah et al. (2017)	international countries	Quantile regression vs GMM regression
Mravlja (2017)		Common Effect, Fixed Effect, and Random Effect

Note: Above table indicates the different techniques used by the previous scholars to determine the factors affecting bank performance.

## **CHAPTER 04**

### **4. Results and Discussion**

This chapter encompasses the statistical tools and techniques used for analysis. It includes efficiency analysis, preliminary analysis, and then regression analysis. The empirical regression analysis used three techniques: static panel estimation, dynamic panel estimation, and quantile regression. The moderating role of financial reporting quality measured by earning management is also discussed. Lastly, this chapter compares the findings of this research with previous findings by other scholars.

#### **4.1. Efficiency Analysis**

DEA (two-stage) intermediation approach is employed to obtain the efficiency scores by considering deposits, interest on deposits, fixed assets, and share capital as input and output in terms of total loans, interest on loans, and net income. After that, these scores are considered a dependent variable to examine the influence of explanatory variables. This study used four inputs and three outputs to calculate DEA measures. The scholars who used DEA as a dependent variable include Sathye (2005) in the Asia-Pacific region, Naceur et al. (2009) in MENA, Sufian and Habibullah (2010) in Thailand, Chan and Heang (2010) in Malaysia, Ardianty and Viverita (2011) in Indonesia, Saha et al. (2015) in Malaysia, Islam and Kassim (2015) in Bangladesh, Chan and Karim (2016) in East Asian Countries, Majeed and Zanib (2016) in Pakistan, Alharthi (2016), Batir et al. (2017) in Turkey, Hasanul et al. (2017) in Bangladesh, Henriquesa et al. (2018) in Brazil, Yonnedi and Panjaitan (2019) in Indonesia and Belasri et al. (2019). The efficiency scores of sampled countries of the Asia-Pacific region are individually and collectively placed in Table-4 (b).

Table-4. Efficiency Scores of Sampled Countries of Asia-Pacific Region for 2013-2018

Country/Region Name	2013	2014	2015	2016	2017	2018
	Eff	Eff	Eff	Eff	Eff	Eff
Pakistan	0.93	0.95	0.94	0.93	0.94	0.96
Bangladesh	0.96	0.95	0.93	0.91	0.92	0.95
India	0.97	0.96	0.97	0.97	0.97	0.95
Indonesia	0.94	0.93	0.94	0.93	0.94	0.92
China	0.94	0.96	0.96	0.98	0.97	0.97
Malaysia	0.97	0.97	0.98	0.98	0.95	0.95
Thailand	0.95	0.96	0.97	0.95	0.92	0.94
Japan	0.94	0.95	0.94	0.94	0.94	0.94
Singapore	1.00	1.00	1.00	1.00	1.00	1.00
Australia	0.96	0.96	0.96	0.97	0.97	0.98
<b>Asia-Pacific Region</b>	<b>0.80</b>	<b>0.82</b>	<b>0.83</b>	<b>0.83</b>	<b>0.79</b>	<b>0.80</b>

Note: This study comprises ten countries taken from the Asia-Pacific region. The efficiency scores of each country separately and Asia-Pacific Region collectively are calculated by using DEAP software. Overall, the efficiency scores (Eff) of the Asia-Pacific region indicate an increasing trend from 2013 to 2016 and then declines in 2017 and increases in 2018.

#### 4.2. Preliminary Analysis

The study tested the following assumptions of multiple regressions: normality by Jarque-Bera test, multicollinearity by correlation analysis/Variance inflation factor, homoscedasticity by Breusch-Pagan test, and auto-correlation through Durbin-Watson test and stationarity by Im, Pesaran and Shin (IPS), Levin-Lin-Chu (LLC). A brief explanation of these assumptions, alongwith the application of the test, is presented in the table below;

**Table- 5. Preliminary Analysis To Check The Assumptions Of the Regression Model**

S. #	Assumptions	Tests Used to Check the Assumptions	Null Hypothesis (H0)	Decision
1	Normality	Jarque Bera Test	Residuals are normally distributed	If p-value > 0.05, accept H0 i.e. data normal and if p-value < .05, not normal data.
2	Multi-Collinearity	Correlation Analysis		The correlation value (r) lies between -1 < r < 1. If the value of r is less than 0.75, there is no issue of multi-collinearity among variables
		Variance Inflation Factors (VIF)	No multi-collinearity in the model	If the value of VIF of each variable is less than 10, then no indicator of multi-collinearity
3	Heteroscedasticity	Breusch-Pagan Test	The error term is constant in the model	If p-value > 0.05, accept H0 i.e. data is homoscedastic and if p-value < .05, data is heteroscedastic.
4	Auto-Correlation	Durbin Watson Test	No autocorrelation in the model	It measures the relationship between the variables' current and past values. Its value lies between 1.5 to 2.5 in all the models, implying no sign of auto-correlation among the predictors
5	Stationarity	Im, Pesaran and Shin (IPS), Levin-Lin-Chu (LLC)	Data is not stationary	If p-value > 0.05, accept H0 i.e. data is non-stationarity and if p-value < .05, data is stationary.
6	Outliers	Cook Distance Test	To check the extreme values in the data	The value of Cook Distance greater than one may create a problem; hence it can be eliminated from the dataset

Note: The assumptions of regression models are not required as in the case of non-parametric approaches such as data envelopment analysis (efficiency).

#### 4.2.1. Descriptive Statistics and Assumption of Normality

It tells us about the mean, median, maximum, minimum, and standard deviations of different variables used in the study. The significant value of Jarque-Bera test is used to check the normality of the dataset. The descriptive statistics of dependent and explanatory variables of sample banks during the period of 2013-2018 are placed as under:

**Table-5 (a). Descriptive Statistics and Assumption of Normality by Jarque-Bera Test**

Variables	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.	Prob.(Jarque-Bera)
ROA_A	1050	0.008	0.008	0.034	-0.039	0.008	0.000
Eff/TE	1050	0.810	0.832	1.000	0.199	0.164	0.000
BNPL	1050	4.054	2.512	39.418	0.000	4.721	0.000
BDEP_A	1050	0.736	0.760	0.940	0.171	0.117	0.000
BLOAN_A	1050	0.591	0.619	0.905	0.153	0.128	0.000
BCAR	1050	8.742	7.833	31.420	2.240	3.929	0.000
BBS	1050	16.849	16.968	22.111	11.466	2.086	0.391
BODS	1050	2.368	2.398	3.258	0.000	0.378	0.000
CEOD	1050	0.760	1.000	1.000	0.000	0.427	0.000
CEOW	1050	0.067	0.000	1.000	0.000	0.250	0.000
WTI_A	1050	0.117	0.083	0.750	0.000	0.137	0.000
OS_A	1050	0.157	0.043	1.000	0.000	0.221	0.000
CSR_I	1050	0.466	0.474	1.000	0.000	0.261	0.000
CR	1050	42.640	41.604	89.326	26.450	12.039	0.000
EFIHF	1050	61.964	57.800	89.400	51.900	9.344	0.000
GC_I	1050	4.614	4.600	5.700	3.400	0.641	0.000
<b>Control Variables</b>							
FRQMV	1050	2.827	-17.016	407.518	-225.911	88.573	0.000
WWGA	1050	-0.106	0.036	1.436	-1.661	0.886	0.000
UNEMP	1050	4.574	4.400	9.800	0.500	1.797	0.000
GDP	1050	4.819	5.100	8.200	0.400	2.196	0.000
INF	1050	3.513	3.100	9.400	-0.900	2.419	0.000
FDCP	1050	127.687	112.100	282.000	42.100	81.078	0.000
FDLL	1050	110.315	102.545	220.210	33.011	67.560	0.000
FDA	1050	101.101	120.494	182.030	34.690	52.708	0.000

SMD	1050	72.139	71.700	242.000	24.400	38.026	0.000
BIR	1050	85.078	80.324	507.429	22.962	30.981	0.000

Note: Table-5 (a) shows the statistic summary (mean, median, minimum, maximum, and standard deviation) of dependent and explanatory variables. Jarque Bera test in the last column is used to check the normality of each variable. This indicates the violation of regression model assumptions, but the scholars argue that it does not matter if the sample size is greater than 30 (Coakes and Steed, 2001). ROA of Asian-Pacific banks is 0.008. This implies that banks earn 0.008% of total assets with a maximum value of 0.034 and a minimum value of -0.039, whereas standard deviation depicts the variation from means. Furthermore, the median profit of Asian-Pacific banks is 0.008, which is the same as the return on assets. Similarly, Eff/TE indicates the efficiency of Asian-Pacific banks with an average efficiency of 0.810, whereas the median values are 0.832, higher than the average means. Similarly, BNPL depicts the highest variation among explanatory variables with the average mean of 4.054, implying expected bad debts, whereas the median value is 2.512, lower than the average means. The explanatory variables that depict the highest means include EFIHF, CR, GC\_I, BBS, BCAR, and BBS. Likewise, the variables that indicate more variations in the explanatory variables are CR, EFIHF, BCAR, and BBS. All other variables used in the study are also explained/interpreted on the same analogy.

#### **4.2.2. Assumption of Multi-Collinearity**

This study used correlation and variance inflation factors to check the assumption of multi-collinearity. Correlation exhibits the strength and direction of relationships among variables. Its value lies between -1 to +1. The table exhibits that none of the values exceeds 0.7; therefore, multicollinearity is not an issue. The variance inflation factors (VIF) of all variables are less than 10, indicating no issue of multicollinearity. Table 5 (b) indicates the strength, direction, and significance of variables.

**Table-5 (b). Assumption of Multi-Collinearity by Correlation and Variance Inflation Factors**

Variables	VIF	BNPL	BDEP_A	BLOAN_A	CAR	BS	BoDS	CEOD	CEOW	WTI	OS	CSR_I	CR	EFI	GC_I	DD	SMD	INF
BNPL	1.345	1.000																
BDEP_A	1.572	0.174	1.000															
BLOAN_A	1.703	-0.304	0.104	1.000														
BCAR	1.805	-0.105	-0.207	0.229	1.000													
BBS	2.310	-0.239	-0.272	-0.170	-0.447	1.000												
BODS	1.483	-0.131	-0.127	-0.160	-0.256	0.446	1.000											
CEOD	1.328	-0.003	-0.219	-0.206	-0.266	0.225	0.361	1.000										
CEOW	1.094	0.010	-0.054	0.012	0.026	0.014	-0.040	-0.038	1.000									
WTI_A	1.312	-0.092	-0.162	0.264	0.165	-0.006	-0.137	-0.114	0.282	1.000								
OS_A	1.261	-0.156	-0.311	0.113	0.249	0.103	-0.049	-0.061	0.042	0.217	1.000							
CSR_I	1.252	0.032	-0.080	0.098	0.094	0.168	0.095	0.063	0.063	0.212	0.219	1.000						
CR	2.927	-0.263	-0.254	0.129	-0.033	0.345	-0.040	0.054	0.060	0.158	0.168	-0.068	1.000					
EFIHF	3.124	-0.309	-0.015	0.405	-0.030	0.235	-0.044	-0.056	0.038	0.120	0.086	-0.087	<b>0.741</b>	1.000				
GC_I	3.169	-0.481	-0.036	0.235	-0.186	0.556	0.137	-0.099	0.006	0.057	0.058	-0.197	0.541	<b>0.732</b>	1.000			
DD	1.441	-0.082	-0.066	-0.002	0.021	0.168	0.051	-0.029	-0.036	-0.009	0.044	0.122	0.490	0.380	0.223	1.000		
SMD	1.251	-0.300	-0.068	0.261	-0.143	0.430	0.128	0.097	-0.007	0.015	0.090	-0.086	0.583	<b>0.759</b>	<b>0.764</b>	0.504	1.000	
INF	2.145	0.311	0.199	-0.038	0.135	-0.499	-0.251	-0.105	0.019	-0.025	-0.136	0.154	-0.530	-0.587	<b>-0.747</b>	-0.164	-0.649	1.000

Note: correlation depicts the intensity and the direction of the relationship. Bold digits/values indicate the highest correlation among the predictors. However, variance inflation factors (VIF) are below 10 among all the predictors, hence no issue of multi-collinearity. This study used an alternative/step-by-step approach in regression analysis to handle the issue of multi-collinearity.



### 4.2.3. Assumption of Homoscedascity

It refers to a situation where the variance of residuals is constant in a regression model. The study used the Breusch-Pagan test to check whether the error term is constant in the model. The results indicate the acceptance of the null hypothesis (H0) that error terms or residuals are constant in the model or data is homoscedastic.

**Table-5 (c). Assumption of Homoscedascity by Using Breusch-Pagan Test**

Breusch-Pagan Test	H0: Constant Variance	Chi2(1)=3.40	Prob>chi2=0.0653
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Note: The table indicates the Breusch-Pagan test to check the homoscedascity/heteroscedasticity. Since the sig value is greater than 0.05, the data is homoscedastic.

### 4.2.4. Assumption of Stationarity

This test is employed to determine the stationary or non-stationary data of the variables. The non-stationary data creates the issue of spurious regression, and any econometric method applied to this data provides meaningless results. This study used the I'm, Pesaran, and Shin (IPS) and Levin-Lin-Chu (LLC) test to verify the panel data stationarity.

**Table-5 (d). Assumption of Stationarity by Using Panel Unit Root Test**

Variables	IPS (Level)	Decision	IPS (1st difference)	Decision	LLC (Level)	Decision	LLC (1st difference)	Decision
ROA_A	-1.139 (0.13)	NS	-14.532 (0.00)	S	-37.38 (0.00)	S	-88.01 (0.00)	S
Eff/TE	-9.914 (0.00)	S	-25.128 (0.00)	S	-42.98 (0.00)	S	-89.24 (0.00)	S
BNPL	5.824 (1.00)	NS	-5.868 (0.00)	S	-6.15 (0.00)	S	-30.03 (0.00)	S
BDEP_A	-2.346 (0.01)	S	-17.791 (0.00)	S	-24.46 (0.00)	S	-56.14 (0.00)	S
BLOAN_A	0.976 (0.84)	NS	-11.619 (0.00)	S	-15.01 (0.00)	S	-42.53 (0.00)	S
BCAR	2.750 (1.00)	NS	-8.784 (0.00)	S	-9.64 (0.00)	S	-31.16 (0.00)	S
BBS	3.522 (1.00)	NS	-12.942 (0.00)	S	-8.72 (0.00)	S	-59.22 (0.00)	S
BODS	-0.239 (0.41)	NS	-18.594 (0.00)	S	-15.02 (0.00)	S	-62.97 (0.00)	S
CEOD	1.086 (0.86)	NS	-0.400 (0.34)	NS	-1.94 (0.02)	S	-2.08 (0.01)	S
CEOW	1.667 (0.95)	NS	-0.878 (0.19)	NS	-2.17 (0.01)	S	-2.94 (0.00)	S
WTI_A	-1.110 (0.13)	NS	-12.058 (0.00)	S	-26.92 (0.00)	S	-34.33 (0.00)	S
OS_A	-24.930 (0.00)	S	-27.956 (0.00)	S	-261.93 (0.00)	S	-196.22 (0.00)	S

CSR_I	-3.920 (0.00)	S	-13.586 (0.00)	S	-48.54 (0.00)	S	-43.85 (0.00)	S
CR	-13.731 (0.00)	S	-16.622 (0.00)	S	-54.90 (0.00)	S	-33.79 (0.00)	S
EFIHF	2.621 (1.00)	NS	-11.543 (0.00)	S	-7.63 (0.00)	S	-34.69 (0.00)	S
GC_I	6.234 (1.00)	NS	-1.346 (0.09)	S	-4.16 (0.00)	S	-9.09 (0.00)	S
FDCP	2.32 (0.99)	NS	-9.21 (0.00)	S	-10.25 (0.00)	S	-25.12 (0.00)	S
FDLL	-1.107 (0.13)	NS	2.977 (1.00)	NS	-18.06 (0.00)	S	3.96 (1.00)	NS
SMD	-9.050 (0.00)	S	-29.116 (0.00)	S	-32.15 (0.00)	S	-77.82 (0.00)	S
GDP	-8.815 (0.00)	S	-27.768 (0.00)	S	-22.27 (0.00)	S	-47.19 (0.00)	S
Inf	-6.297 (0.00)	S	-7.378 (0.00)	S	-38.12 (0.00)	S	-22.93 (0.00)	S
WWGA	-11.53 (0.00)	S	-9.89 (0.00)	S	-59.38 (0.00)	S	-22.41 (0.00)	S
BIR	1.16 (0.87)	NS	-17.16 (0.00)	S	-12.4 (0.00)	S	-53.11 (0.00)	S

Note: IPS and LLC denotes Im-Pesaran-Shin (w-t-bar) and Levin-Lin-Chu. IPS H0: all panels contain a unit root, and H1: some panels are stationarity. LLC H0: panels contain a unit root, H1: Panels are stationarity. LLC assumes a common unit root process; however, IPS assumes an individual unit root process. P-values are in brackets and indicate \*, \*\*, \*\*\* at 1%, 5% and 10%.

#### 4.2.5. Checking Outliers

There are different tests used to check the outliers in the data. This study used Cook Distance to identify the observation that may be having an undue influence regression model. It is used to identify the outliers in the data that significantly influence the regression model. The value of cook distance greater than or above one may create a problem; hence it can be eliminated from the dataset. The study uses cook distance on both samples, such as 179 commercial banks (original dataset), and after removing outliers observations from the dataset, i.e., on a sample of 175 commercial banks. The graphs on both samples are presented on Page No. 211-224.

### 4.3. Regression Analysis

In this section, we divided the regression analysis into three broad categories, i.e. (i) to observe the individual influence of explanatory variables on dependent variables, (ii) to investigate the joint/collective impact of explanatory variables on explained variables; (iii) to examine the moderating role of financial reporting quality. This study used bank-specific factors, corporate governance factors, environmental factors (corporate social responsibility disclosure index), concentration ratio, and institutional factors (economic freedom index, global competitiveness index) as explanatory variables. However, return on assets (ROA) and Efficiency (TE) are dependent variables. Three techniques are employed to examine the influence of explanatory variables on profitability and efficiency, such as panel estimation, quantile regression, and GMM estimation. The first two techniques, such as panel estimation and quantile regression, are applied to the models (from equation 1a/1b to 6a/6b) when investigating the relationship of individual explanatory variables with bank profitability and efficiency. Similarly, the techniques such as panel estimation, GMM and quantile regression are used in the models (from equation 7a/7b to 11a/11b) to determine the influence of joint/collective explanatory variables on banks' profitability and efficiency by using a multiple/multivariate regression model.

#### 4.3.1. Multiple Regression Model By Examining the Individual Impact of Explanatory Variables on Performance

This section covers the regression results of the individual impact of explanatory variables on bank profitability (Return on Assets) and efficiency (Eff/TE). Panel estimation techniques (common effect model (CEM), fixed effect model (FEM), random effect model (REM), and quantile regression are employed to examine the impact of individual explanatory variables on endogenous variables.

##### 4.3.1.1. Panel Estimation Techniques

Table 6 (a,b) indicates the results of panel estimation techniques such as common, fixed, and random effects with respect to ROA and TE. The results are obtained after running the regression and then testing the three hypotheses to select which model is best among pooled, fixed, and random effects, i.e., (a) BP Lagrange Multiplier H0: CEM is better than REM; (b) Hausman H0: REM is better than FEM; (c) Likelihood Ratio H0: Pooled is better than FEM. The model is selected or rejected based on the value. Furthermore, where the p-

value of these tests is less than 0.05, this implies a rejection of the null hypothesis and vice-versa. This study found a fixed-effect model (FEM) in both cases of the dependent variable.

**Table-6 (a). Panel Estimation Techniques (Return on Assets)**

Models	1a	2a	3a	4a	5a	6a
Variables	BSF	CGF	CSR_I	CR	EFIHF	GC_I
ROA_A(-1)	0.112 (0.038)*	0.220 (0.112)	0.240	0.258	0.263	0.230
BNPL	-0.001 (0.000)*					
BDEP_A	0.002 (0.004)					
BLOAN_A	0.015 (0.004)*					
BCAR	0.000 (0.000)**					
BBS	-0.002 (0.001)**					
BODS		0.001 (0.001)				
CEOD		-0.001 (0.001)				
CEOW		-0.001 (0.001)				
WTI_A		-0.006 (0.003)**				
OS_A		-0.005 (0.002)*				
CSR_I			-0.008 (0.002)*			
CR				0.000 (0.000)		
EFIHF					0.000 (0.000)	
GC_I						-0.012 (0.003)*
DD	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
WWGA	0.001 (0.003)	0.003 (0.001)**	0.004 (0.001)*	0.003 (0.002)***	0.003 (0.002)**	
UNEMP	0.000 (0.000)	0.000 (0.000)***	0.000 (0.000)	0.000 (0.000)		
GDP	-0.001 (0.000)**	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)		
FDCP	0.000 (0.000)***		0.000 (0.000)			
FDA		0.000 (0.000)*		0.000 (0.000)*		
SMD	0.000 (0.000)**	0.000 (0.000)	0.000 (0.000)***	0.000 (0.000)		
BIR		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
C	0.043 (0.018)**	0.006 (0.003)**	0.002 (0.003)	0.010 (0.012)	0.016 (0.006)**	0.056 (0.012)*

R-sqr.	0.809	0.755	0.755	0.748	0.745	0.760
Adj. R-sqr.	0.757	0.688	0.690	0.681	0.679	0.699
DW stat	1.991	2.205	2.214	2.220	2.149	2.254
F-stat.	15.659	11.294	11.651	11.214	11.350	12.397
Prob(F-stat.)	0.000	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Return on Assets (ROA) is used as the dependent variable. BSF, CGF, CSR\_1, CR, EFIHF, GC\_1 in the second columns to onwards stands for bank-specific factors, corporate governance factors, corporate social responsibility disclosure, concentration ratio, economic freedom index issued by Heritage Foundation, global competitiveness index, respectively. Model 1a, 2a, 3a, 4a, 5a, 6a represent the impact of the individual explanatory variables such as bank-specific factors, governance-related factors, environmental factors, concentration ratio, institutional factors (economic freedom index, global competitiveness index) on ROA in Asia-Pacific Countries. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), Private credit by deposit money bank to GDP (%) (FDCP), Deposits money bank assets to GDP (%) (FDA), stock market development (SMD), intermediation ratio(BIR). R-Squared indicates that how much variation comes in our model is due to the explanatory variable, i.e., 80.9%, 75.5%, 75.5%, 74.8%, 74.5%, and 76%, as in these models when the endogenous variable is ROA. The p-value of the F-statistics is zero exhibiting that all the models are fit and significant. Durbin-Watson depicts to test the auto-correlation among the variables. Its value lies between 1.5 to 2.5 in all the models, implying no sign of auto-correlation among the predictors. The lagged value of dependent variables (return on assets) is significant in all the models.

**Table-6 (b). Panel Estimation Techniques (Efficiency)**

Models	1b	2b	3b	4b	5b	6b
Variables	BSF	CGF	CSR_I	CR	EFIHF	GC_I
TE(-1)	-0.157 (0.076)**	-0.163 (0.072)**	-0.157 (0.075)**	-0.156 (0.075)**	-0.157 (0.075)**	-0.158 (0.074)**
BNPL	0.001 (0.000)*					
BDEP_A	-0.200 (0.098)**					
BLOAN_A	0.040 (0.054)					
BCAR	0.000 (0.002)					
BBS	-0.027 (0.025)					
BODS		0.082 (0.022)*				
CEOD		0.001 (0.039)				
CEOW		0.035 (0.016)**				
WTI_A		0.080 (0.049)				
OS_A		-0.048 (0.042)				
CSR_I			0.004 (0.036)			
CR				-0.002 (0.001)		
EFIHF					0.000 (0.003)	
GC_I						-0.005 (0.027)
DD		0.000 (0.000)*			0.000 (0.000)*	0.000 (0.000)*
WWGA	-0.096 (0.029)*		-0.089 (0.030)*	-0.058 (0.043)	-0.106 (0.037)*	
UNEMP	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.001)			
GDP	-0.002 (0.003)	-0.002 (0.003)	-0.003 (0.003)			
INF				-0.005 (0.004)		
FDCP	-0.001 (0.000)***		-0.001 (0.000)***	-0.001 (0.000)**		
FDLL						
SMD		0.000 (0.000)		0.000 (0.000)		
BIR		0.001 (0.000)**	0.001 (0.000)*	0.001 (0.000)***	0.001 (0.000)*	0.001 (0.000)*
C	1.588 (0.437)*	0.729 (0.067)*	0.962 (0.030)*	1.052 (0.083)*	0.856 (0.143)*	0.920 (0.118)*

R-sqr.	0.496	0.499	0.495	0.495	0.494	0.493
Adj. R-sqr.	0.361	0.365	0.362	0.363	0.364	0.363
DW stat.	2.195	2.179	2.195	2.192	2.189	2.186
F-stat.	3.686	3.712	3.746	3.758	3.793	3.800
Prob(F-stat.)	0.000	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Efficiency (TE) is used as the dependent variable. Model 1b, 2b, 3b, 4b, 5b, 6b represent the impact of the individual independent variables such as bank-specific factors, governance factors, environmental factors, concentration ratio, institutional factors (economic freedom index, global competitiveness index) on TE in Asia-Pacific Countries. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), inflation (INF), Private credit by deposit money bank to GDP (%) (FDCP), Liquid liabilities to GDP (%) (FDLL), stock market development (SMD), intermediation ratio (BIR). R-Squared indicates how much variation in our model is due to the explanatory variable, i.e., 49.6%, 49.9%, 49.5%, 49.5%, 49.4%, and 49.3%, as in these models with respect to efficiency. The p-value of the f-statistics is zero in all the models, which exhibits that the models are statistically fit and significant. Durbin-Watson depicts to test the auto-correlation among the variables. Its value lies between 1.5 to 2.5 in all the models, implying no sign of auto-correlation among the predictors. The lagged value of dependent variables (efficiency) is significant in all the models.

### **Model-1 (a,b) - Bank-Specific Factors and Performance**

The study found that non-performing loans (NPLs) significantly and negatively influence ROA; however, these factors have a significant and positive association with efficiency. This is because of the risky lending that induces the borrowers to default or fails to meet their payments obligations. Ultimately, the NPLs not only stuck the banks' income but also lost the investments/lending amount. This compels the banks to spend additional costs on hiring additional employees to recover such loans from defaulters. It further forces banks to take additional loans from other sources at higher interest rates that tarnish the bank's image. Thus, due to the existence of NPLs, the bank may face default risk and reputational risk that hampers its credit rating and discourages the investor confidence in the banking system from making reasonable investments. The previous literature that supports the negative relationship of NPLs with ROA includes Davydenko (2010), Wu and Shen (2013), Islam and Nishiyama (2016), Ghosh (2017). However, the supporters of the findings that NPLs have a significant positive impact on efficiency include Raphael (2013), Belasri, Gomes, and Pijourlet (2019) in developed countries.

It was found in the current study that there is a significant and negative relationship of liability size (deposit to total assets) with efficiency; hence, the null hypothesis is accepted. This is consistent with the study of Phan et al. (2018) in the Asia-Pacific region. They claimed that the banks possessing a higher level of deposits indicate illiquidity of assets. This means that the banks providing fewer loans to borrowers hamper economic activities and decrease banks' profitability. As a result, banks cannot meet the obligations of customers to pay back the money or face the risk of maturity mismatches. However, on the other side, deposits insignificantly and positively influence ROA.

The study found that loans and advances significantly and positively influence ROA. The supporters of this argument claim that more lending implies more generation of interest revenue if banks maintain better risk management to minimize credit risks. This will further enhance or create economic activities in the countries (Bourke, 1989; Athanasoglou et al., 2006; Syafri, 2012; Yao et al., 2018, Jayati and Subrata, 2018). Contrary to this, loans and advances shed an insignificant and positive impact on efficiency.

This study agrees with the null hypothesis, which states a significant and positive relationship of capital ratio with ROA; however, these variables have an insignificant



relationship with efficiency. The scholars who observed the same findings include Bourke (1989), Syafri (2012), Yao et al. (2018), and Aziz and Knutsen (2019) in Arab countries. They contend that better-capitalized banks are likely to face fewer chances of default/solvency costs and low funding costs, thus generating higher profits. This is consistent with the signalling theory and expected bankruptcy cost.

This study agrees with the null hypothesis, which postulates a significant and negative association of bank size with ROA. The researchers that support the findings of this study include Bourke (1989), Sufian and Habibullah (2010) in Indonesia; Syafri (2012); Doumposa et al. (2017). They argue that larger banks decline in performance due to diseconomies of scale, mismanagement, bureaucratic issues, and engagement in more risky investments. This is because the banks are facing a too big to fail paradigm. However, on the other side, an insignificant and negative relationship exists between bank size and efficiency.

#### **Model-2 (a,b)-Corporate Governance and Performance**

The study accepted the null hypothesis, stating that board size significantly and positively influences efficiency. The scholars in favour of this argument propagate that the members of the larger boards possess versatile education, skills, and experience to make better decisions, and it becomes difficult for the chief executive officer to dominate. The previous literature that supports the findings of this study includes Chan and Heang (2010), Tanna et al. (2011), Salim et al. (2016), and Soba et al. (2016). Conversely, an insignificant and positive relationship of board size is found with ROA.

The study reported that women CEOs significantly and positively influence efficiency. This is because of social identity theory which posits that individuals develop social identities, self-esteem, and self-recognition based on several features such as demographic, culture, gender, race, language, etc. The theory further states that women are shrewd in decision-making and perform multi-tasking (Tajfel & Turner, 1979; Kramer, Konrad, Erkut, & Hooper, 2016). However, on the other side, women CEO insignificantly and negatively influence ROA.

The study accepted the null hypothesis, which postulates an inverse relationship of female participation on the board with ROA. This is aligned with the tokenism theory, which implies that the role of women on board is just like a breaking of the glass ceiling and showpiece in organizations. The previous scholars that backed this argument include Salim

(2013), Kilic (2015); Conyon and He (2017); Ghosh (2017); Tomislava et al. (2018); Mohammad et al. (2018). However, on the other side, the results are insignificant and positive, as in the case of efficiency.

The study found that foreign ownership significantly and negatively influences ROA. The supporters of this argument claim that the foreign banks may find difficulty in getting the knowledge about the host country's culture, economic & social norms, government policy and regulations, institutional framework, and political factors (Jensen & Szulanski, 2004; Olweny & Shipho, 2011; Mamatzakis et al., 2017). Contrary to this, an insignificant and inverse association between foreign ownership and efficiency.

### **Model-3 (a,b)-Corporate Social Responsibility Disclosure Index and Performance**

The analysis indicates a significant and negative relationship between the CSR disclosure index with ROA. This is because agency theory postulates that the manager's main responsibility is to increase firm profit and stakeholder's wealth. Doing anything else will misuse the authority and bring additional expenses (Friedman, 1970). The previous scholars that support this argument include Taskin (2015), Moslemany and Etab (2017), and Oyewumi et al. (2018). Conversely, an insignificant and positive relationship exists between the CSR disclosure index and efficiency.

### **Model-6 (a,b)- Institutional Factors and Performance**

The study found a significant and negative relationship between institutional factors such as the global competitiveness index and ROA. The results align with Naceur and Omran's findings (2010). They contend that most countries' global competitiveness is lesser or adverse, hampers economic activities, and adversely affects the banks. However, the results are insignificant and negative, as in the case of efficiency.

### **Control Variables and Performance**

The study found a significant and positive impact of demand density on ROA as reflected in model 3 (a), whereas the voice and accountability with ROA as shown in models 2,3,4,5 (a), unemployment in model 2(a), financial sector development such as (fdcp) in model 1(a), fda in model 2,4 (a), stock market development in model 1, 3 (a), intermediation

ratio in all the models, however, GDP influences ROA significantly and negatively in model 1(a).

Similiarly, the study found a significant and positive impact of demand density on efficiency as reflected in models 2,5,6 (b), intermediation ratio with ROA in models 2,3,4,5,6 (b); however, voice and accountability report a significant and negative relationship with efficiency as shown in model 1,3,5 (b), financial sector development such as (fdcp) in model 1,3,4 (b) respectively.

### 4.3.1.2. Quantile Regression

Quantile regression is applied when any of the basic assumptions of linear regression do not meet, such as linearity, serial correlation, heteroscedasticity, etc. It differs from the classical ordinary least square method as it predicts the relationship between an explanatory variable and dependent variable based on median rather than on conditional mean. It is preferred over other techniques as it is less prone to the influence of outliers in the data. It can also be helpful as the researcher can predict outcome variables at any quantile level, such as 25th, 50th, or 75th percentile, etc. Table 6 (c,d) reports quantile regression of the individual impact of explanatory variables on banks' profitability and efficiency in ten countries of the Asia-Pacific region.

**Table-6 (c).Quantile Regression (Return on Assets)**

Models	1a	2a	3a	4a	5a	6a
Variables	BSF	CGF	CSR_I	CR	EFIHF	GC_I
BNPL	-0.001 (0.000)*					
BDEP_A	0.001 (0.001)					
BLOAN_A	-0.001 (0.001)					
BCAR	0.000 (0.000)*					
BBS	0.001 (0.000)*					
BODS		0.000 (0.000)				
CEOD		0.000 (0.000)				
CEOW		0.000 (0.001)				
WTI_A		-0.001 (0.001)				
OS_A		0.004 (0.001)*				
CSR_I			0.003 (0.000)*			

CR				0.000 (0.000)*		
EFIHF					0.000 (0.000)	
GC_I						-0.004 (0.000)*
DD	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)*
WWGA	-0.002 (0.000)*	-0.004 (0.000)*	-0.003 (0.000)*	-0.004 (0.000)*	-0.003 (0.000)*	
UNEMP	0.000 (0.000)	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)**		
GDP	-0.001 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*		
FDCP	0.000 (0.000)*		0.000 (0.000)*			
FDA		0.000 (0.000)*		0.000 (0.000)*		
SMD	0.000 (0.000)***	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*		
BIR		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
C	0.000 (0.002)	0.004 (0.002)**	0.004 (0.001)*	0.004 (0.001)*	0.002 (0.002)	0.020 (0.001)*
Pseudo R-sqr.	0.348	0.213	0.220	0.200	0.153	0.059
Adj R-sqr.	0.341	0.204	0.214	0.194	0.149	0.056
Quasi-LR stat.	1337.268	672.804	708.230	614.948	407.044	108.396
Prob(Quasi- LR stat)	0.000	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Return on Assets (ROA) is employed as a dependent variable. Model 1a, 2a, 3a, 4a, 5a, 6a represent the impact of the individual explanatory variables such as bank-specific factors, governance factors, environmental factors, concentration ratio, institutional factors (economic freedom index, global competitiveness index) on ROA by applying the quantile regression in ten countries of the Asia-Pacific region. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), Private credit by deposit money bank to GDP (%) (FDCP), Deposits money bank assets to GDP (%) (FDA), stock market development (SMD),

intermediation ratio (BIR). Pseudo R-squared indicates how much variation comes in our model due to the explanatory variable, i.e., 34.8%, 21.3%, 22%, 20%, 15.3%, 5.9%, respectively, as in these models for ROA. The p-value of the quasi LR-statistics is zero in all the models, which exhibits that the models are statistically fit and significant.

Table-6 (d). Quantile Regression (Efficiency)

Models	1b	2b	3b	4b	5b	6b
Variables	BSF	CGF	CSR_I	CR	EFIHF	GC_I
BNPL	-0.001 (0.001)					
BDEP_A	-0.016 (0.065)					
BLOAN_A	0.115 (0.067)***					
BCAR	-0.001 (0.002)					
BBS	-0.002 (0.005)					
BODS		-0.019 (0.020)				
CEOD		-0.042 (0.018)**				
CEOW		-0.001 (0.028)				
WTI_A		0.048 (0.054)				
OS_A		-0.034 (.037)				
CSR_I			-0.070 (0.029)**			
CR				-0.001 (0.001)		
EFIHF					-0.001 (0.001)	
GC_I						0.012 (0.013)
DD		0.000 (0.000)			0.000 (0.000)	0.000 (0.000)
WWGA	-0.002 (0.012)		-0.001 (0.010)	0.006 (0.010)	0.008 (0.012)	
UNEMP	0.000 (0.005)	-0.004 (0.006)	0.001 (0.005)			
GDP	0.007 (0.005)	0.007 (0.004)***	0.007 (0.005)			
INF				-0.011 (0.005)**		
FDCP	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)**		
FDLL						
SMD		0.000 (0.000)		0.000 (0.000)		
BIR		0.000 (0.000)	0.000 (0.000)**	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
C	0.385 (0.119)*	0.477 (0.092)*	0.374 (0.065)*	0.532 (0.075)*	0.478 (0.083)*	0.373 (0.060)*
Pseudo R-sqr.	0.095	0.101	0.098	0.094	0.091	0.091

Adj. R-sqr.	0.084	0.089	0.091	0.086	0.086	0.087
Quasi-LR stat.	105.854	120.119	112.321	107.409	100.723	101.068
Prob(Quasi- LR stat)	0.000	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Efficiency (TE) is used as the dependent variable. Model 1b, 2b, 3b, 4b, 5b, 6b represent the impact of the individual exogenous variables such as bank-specific factors, governance factors, environmental factors, concentration ratio, institutional factors (economic freedom index, global competitiveness index) on TE by applying quantile regression in the ten countries of the Asia-Pacific region. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), inflation (INF), Private credit by deposit money bank to GDP (%) (FDCP), Liquid liabilities to GDP(%) (FDLL), stock market development (SMD), intermediation ratio (BIR). Pseudo R-squared indicates that how much variation comes in our model is due to the explanatory variables, i.e., 9.5%, 10.1%, 9.8%, 9.4%, 9.1%, 9.1%, respectively, in these models with respect to efficiency. The p-value of the quasi LR-statistics is zero in all the models, which exhibits that the models are statistically fit and significant.



### **Model-1 (a,b) - Bank-Specific Factors and Performance**

The analysis exhibits a significant and negative correlation between non-performing loans (NPLs) and ROA. The previous scholars that backed this argument include Davydenko (2010); Wu and Shen (2013); Islam and Nishiyama (2016); Djalilov and Piesse (2016); Ghosh (2017). However, an insignificant and negative relationship of NPLs exists in the case of efficiency.

The study found a significant and positive impact of loans and advances on efficiency. The scholars that are in favour of this argument include Sufian and Habibullah (2010) in Thailand; Shawtari et al. (2015); Abbas et al. (2016); Batir et al. (2017). However, on the other side, an insignificant and inverse association exists between lending size (loans and advances) and ROA.

The analysis agrees with the null hypothesis that capitalization significantly enhances ROA. The previous scholars that support this argument include Bourke (1989); Berger (1995); Athanasoglou et al. (2006), Islam and Nishiyama (2016); Gitau et al. (2017); Aziz and Knutsen (2019). Conversely, the results are insignificant and negative, as in the case of efficiency.

The supporters of such findings that a significant and positive influence of bank size on ROA justifiesthose larger banks enjoy benefits of cost reduction, product, and risk diversification compared to their competitors due to the economies of scale. The scholars that backed this opinion include Wasiuzzaman and Gunasegavan (2013); Kilic (2015); Zheng et al. (2017); Yao et al. (2018); Jayati and Subrata (2018). Conversely, bank size is found to have an insignificant and indirect relationship with efficiency.

### **Model-2 (a,b)-Corporate Governance and Performance**

The analysis accepted the null hypothesis, which stated that CEO duality significantly and negatively influences efficiency. This is aligned with the agency theory as it postulates that duality makes managerial monitoring ineffective. Instead of protecting the interests of an organization, the CEOs may protect their interests. The scholars that support this argument include Maria and Sanchez (2010). Contrary to this argument, the results are insignificant and positive, as in the case of ROA.

This study accepted the null hypothesis, which stated a significant and positive impact of foreign ownership on ROA. The scholars that backed this argument include Berger et al.

(2000), Williams (2003); Athanasoglou et al. (2006); Arouri et al. (2011); Jayati and Subrata (2018). They advocated that the foreign banks may have a comparative advantage of huge capital, product differentiation, knowledge transfer, modern technology, and better risk management. Conversely, foreign ownership shed an insignificant and negative impact on efficiency.

### **Model-3 (a,b)-Corporate Social Responsibility Disclosure Index and Performance**

The study accepted the null hypothesis, which stated a significant and positive impact of the CSR index on ROA. This is consistent with the stakeholder theory, which states that the firm's task is to increase the shareholder's wealth and company profits and protect the interests/expectations of various stakeholders. The scholars that found the same results justify that the investments in CSR would lead to improved image/reputation, improved retention and loyalty of the customer, improved service delivery, attracting investors and prospective employees, improved employee productivity, and reduced cost of capital (Freeman, 1984; Weber, 2017; Maqbool & Zameer, 2018; Gangi et al., 2018; Selcuk, 2019; Szegedi et al., 2020). However, on the other hand, CSR adversely and significantly influences efficiency. This agrees with the agency theory, which states that engaging in CSR brings additional expenses to firms (Friedman, 1970; Taskin, 2015; Moslemany & Etab, 2017).

### **Model-4 (a,b) – Market Structure and Performance**

The supporters of the claim that there is a significant and positive relationship of concentration ratio with ROA justify that banks earn supernormal profits in a highly concentrated market due to lower cost of collusion or less competition. The results are aligned with the SCP hypothesis (Bain, 1956; Shawtari et al., 2015 in Yemen & Sufian et al., 2016 in Malaysia). They further contend that banks earn higher supernormal profits and larger market power or share by offering well-differentiated products in the market. This matched with the relative market power hypothesis (Shepherd, 1982). They further argue that banks enjoy higher profits and greater market shares by lowering the cost of doing business and operational costs. This agrees with the efficient structure hypothesis (Demsetz, 1973). And some of the other scholars that obtained the same results include Naceur and Kandil (2009), Muda et al. (2013), Abduh and Idrees (2013), Islam and Nishiyama (2016) and Aziz

and Knutsen (2019). Conversely, the results are insignificant and negative, as in the case of efficiency.

#### **Model-5/6 (a,b) – Institutional Factors and Performance**

The study accepted the null hypothesis, which stated a significant and negative relationship of institutional factors such as the global competitiveness index with ROA. Previous scholars favouring this relationship include Naceur and Omran (2010). The results are the same as those obtained from the panel estimation technique. Conversely, the results are insignificant and positive, as in the case of efficiency.

#### **Control Variables and Performance**

The study found a significant and positive impact of demand density on ROA in all the models, unemployment in models 2,3,4 (a), financial sector development such as (fdcp) in models 1,3(a), fda in models 2,4 (a), stock market development in all the models, intermediation ratio in all the models. However, voice and accountability have a significant and negative relationship with ROA in all the models. Furthermore, the relationship of GDP growth rate with ROA observed mixed results in all models.

Similarly, the study found a significant and positive impact of GDP on efficiency in model 2(b), financial sector development such as (fdcp) in model 4(b), intermediation ratio in model 3 (b). However, inflation shed a negative and significant relationship in model 4(b).

#### **Quantile Regression Process**

Table 6 (e,f) indicates a quantile regression model of each variable at 25%, 50%, and 75% quantile levels. It tells us about the significant values of each variable at different levels of quantiles. Further, it provides information on whether the significant value of explanatory variables at lower quantile varies from that at higher quantile.

**Table-6 (e). Quantile Regression Process at 25%, 50% and 75% (Return on Assets)**

Models		1a	2a	3a	4a	5a	6a
Variables	Quantile	BSF	CGF	CSR_I	CR	EFIHF	GC_I
BNPL	0.25	-0.001 (0.000)*					
	0.50	-0.001 (0.000)*					
	0.75	0.000 (0.000)*					
BDEP_A	0.25	0.003 (0.001)*					
	0.50	0.001 (0.001)					
	0.75	0.001 (0.001)					
BLOAN_A	0.25	-0.001 (0.001)					
	0.50	-0.001 (0.001)					
	0.75	-0.001 (0.002)					
BCAR	0.25	0.000 (0.000)*					
	0.50	0.000 (0.000)*					
	0.75	0.001 (0.000)*					
BBS	0.25	0.001 (0.000)*					
	0.50	0.001 (0.000)*					
	0.75	0.001 (0.000)*					
BODS	0.25		0.000 (0.001)				
	0.50		0.000 (0.000)				
	0.75		0.001 (0.001)***				
CEOD	0.25		0.001 (0.000)***				
	0.50		0.000 (0.000)				
	0.75		0.000 (0.000)				
CEOW	0.25		-0.001 (0.001)				

WTI_A	0.50	0.000 (0.001)					
	0.75	0.000 (0.001)					
	0.25	-0.001 (0.001)					
	0.50	-0.001 (0.001)					
	0.75	-0.002 (0.001)***					
OS_A	0.25	0.004 (0.001)*					
	0.50	0.004 (0.001)*					
	0.75	0.007 (0.001)*					
CSR_I	0.25	0.003 (0.001)*					
	0.50	0.003 (0.000)*					
	0.75	0.003 (0.000)*					
CR	0.25	0.000 (0.000)*					
	0.50	0.000 (0.000)*					
	0.75	0.000 (0.000)					
EFIHF	0.25	0.000 (0.000)*					
	0.50	0.000 (0.000)					
	0.75	0.000 (0.000)*					
GC_I	0.25	-0.002 (0.000)*					
	0.50	-0.004 (0.000)*					
	0.75	-0.004 (0.001)*					
DD	0.25	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)*
	0.50	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)*
	0.75	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
WWGA	0.25	-0.002 (0.000)*	-0.003 (0.000)*	-0.004 (0.000)*	-0.003 (0.000)*	-0.003 (0.000)*	

UNEMP	0.50	-0.002 (0.000)*	-0.004 (0.000)*	-0.003 (0.000)*	-0.004 (0.000)*	-0.003 (0.000)*
	0.75	-0.002 (0.000)*	-0.003 (0.001)*	-0.003 (0.001)*	-0.003 (0.001)*	-0.002 (0.000)*
	0.25	0.000 (0.000)	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	
	0.50	0.000 (0.000)	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)**	
	0.75	0.000 (0.000)	0.000 (0.000)**	0.001 (0.000)*	0.000 (0.000)	
GDP	0.25	-0.001 (0.000)*	0.000 (0.000)**	-0.001 (0.000)*	0.000 (0.000)***	
	0.50	-0.001 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	
	0.75	-0.001 (0.000)*	0.000 (0.000)	-0.001 (0.000)**	0.000 (0.000)	
FDCP	0.25	0.000 (0.000)*		0.000 (0.000)		
	0.50	0.000 (0.000)*		0.000 (0.000)*		
	0.75	0.000 (0.000)*		0.000 (0.000)*		
FDA	0.25		0.000 (0.000)		0.000 (0.000)***	
	0.50		0.000 (0.000)*		0.000 (0.000)*	
	0.75		0.000 (0.000)*		0.000 (0.000)*	
SMD	0.25	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	
	0.50	0.000 (0.000)***	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	
	0.75	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	
BIR	0.25		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
	0.50		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
	0.75		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*
C	0.25	-0.004 (0.002)**	-0.002 (0.001)***	-0.002 (0.001)	-0.002 (0.001)**	-0.006 (0.002)*
	0.50	0.000 (0.002)	0.004 (0.002)**	0.004 (0.001)*	0.004 (0.001)*	0.002 (0.002)
	0.75	-0.002 (0.003)	0.007 (0.002)*	0.010 (0.002)*	0.008 (0.002)*	0.012 (0.002)*

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. The table exhibits the significant values of each variable at different levels of quantiles, i.e., 25%, 50%, and 75%. Return on Assets (ROA) is taken as a dependent variable. Model 1a, 2a, 3a, 4a, 5a, 6a represent the impact of

the individual explanatory variables such as bank-related factors, corporate governance factors, environmental factors, concentration ratio, institutional factors (economic freedom index, global competitiveness index) on ROA in ten countries of the Asia-Pacific region. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), Private credit by deposit money bank to GDP (%) (FDCP), Deposits money bank assets to GDP (%) (FDA), stock market development (SMD), intermediation ratio (BIR).

**Table-6(f). Quantile Regression Process at 25%, 50% and 75% (Efficiency)**

Models		1b	2b	3b	4b	5b	6b
Variables	Quantile	BSF	CGF	CSR_I	CR	EFIHF	GC_I
BNPL	0.250	0.001 (0.001)					
	0.500	-0.001 (0.001)					
	0.750	-0.002 (0.002)					
BDEP_A	0.250	-0.024 (0.110)					
	0.500	-0.016 (0.065)					
	0.750	0.021 (0.059)					
BLOAN_A	0.250	0.061 (0.074)					
	0.500	0.115 (0.067)					
	0.750	0.103 (0.071)					
BCAR	0.250	0.000 (0.003)					
	0.500	-0.001 (0.002)					
	0.750	0.000 (0.002)					
BBS	0.250	-0.008 (0.007)					
	0.500	-0.002 (0.005)					
	0.750	-0.002 (0.004)					
BODS	0.250		-0.003 (0.021)				
	0.500		-0.019 (0.020)				
	0.750		0.007 (0.015)				
CEOD	0.250		-0.040 (0.019)**				
	0.500		-0.042 (0.018)**				
	0.750		-0.035 (0.015)*				
CEOW	0.250		-0.011 (0.025)				



	0.500		-0.001 (0.028)				
	0.750		-0.007 (0.026)				
WTI_A	0.250		0.011 (0.054)				
	0.500		0.048 (0.054)				
	0.750		0.032 (0.039)				
OS_A	0.250		-0.049 (0.029)***				
	0.500		-0.034 (0.037)				
	0.750		0.012 (0.029)				
CSR_I	0.250			-0.056 (0.028)**			
	0.500			-0.070 (0.029)**			
	0.750			-0.017 (0.024)			
CR	0.250				-0.001 (0.001)		
	0.500				-0.001 (0.001)		
	0.750				-0.001 (0.001)		
EFIHF	0.250					-0.003 (0.001)**	
	0.500					-0.001 (0.001)	
	0.750					0.000 (0.001)	
GC_I	0.250						-0.013 (0.009)
	0.500						0.012 (0.013)
	0.750						0.011 (0.012)
DD	0.250		0.000 (0.000)			0.000 (0.000)	0.000 (0.000)
	0.500		0.000 (0.000)			0.000 (0.000)	0.000 (0.000)
	0.750		0.000 (0.000)			0.000 (0.000)	0.000 (0.000)
WWGA	0.250	0.001 (0.013)		0.004 (0.009)	0.006 (0.009)	0.013 (0.010)	

	0.500	-0.002 (0.012)		-0.001 (0.010)	0.006 (0.010)	0.008 (0.012)	
	0.750	0.003 (0.011)		0.005 (0.009)	0.008 (0.007)	0.004 (0.008)	
UNEMP	0.250	0.005 (0.005)	0.000 (0.006)	0.003 (0.005)			
	0.500	0.000 (0.005)	-0.004 (0.006)	0.001 (0.005)			
	0.750	-0.002 (0.004)	0.001 (0.005)	-0.001 (0.004)			
GDP	0.250	0.006 (0.005)	0.006 (0.004)	0.006 (0.004)			
	0.500	0.007 (0.005)	0.007 (0.004)***	0.007 (0.005)			
	0.750	0.008 (0.004)***	0.002 (0.003)	0.005 (0.004)			
FDCP	0.250	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)		
	0.500	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)**		
	0.750	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)		
SMD	0.250		0.000 (0.000)		0.000 (0.000)		
	0.500		0.000 (0.000)		0.000 (0.000)		
	0.750		0.000 (0.000)		0.000 (0.000)		
BIR	0.250		0.000 (0.000)**	0.000 (0.000)***	0.000 (0.000)***	0.000 (0.000)**	0.000 (0.000)
	0.500		0.000 (0.000)	0.000 (0.000)**	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
	0.750		0.000 (0.000)***	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Inflation	0.250				-0.006 (0.006)		
	0.500				-0.011 (0.005)**		
	0.750				-0.008 (0.005)		
C	0.250	0.354 (0.230)	0.320 (0.095)*	0.279 (0.070)*	0.364 (0.085)*	0.412 (0.086)*	0.318 (0.069)*
	0.500	0.385 (0.119)*	0.477 (0.092)*	0.374 (0.065)*	0.532 (0.075)*	0.478 (0.083)*	0.373 (0.060)*
	0.750	0.669 (0.113)*	0.692 (0.065)*	0.674 (0.056)*	0.786 (0.065)*	0.724 (0.062)*	0.674 (0.063)*

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. The table exhibits the significant values of each variable at different levels of quantiles, i.e., 25%, 50%, and 75%. Efficiency (TE) is used as a dependent variable. Model 1a, 2a, 3a, 4a, 5a, 6a represent the impact of the individual explanatory variables such as bank-specific factors, corporate governance factors, environmental factors, concentration

ratio, institutional factors (economic freedom index, global competitiveness index) on ROA in ten countries of the Asia-Pacific region. The control variables used in the analysis include demand density (DD), worldwide governance indicators-voice and accountability (WWGA), unemployment (UNEMP), gross domestic product (GDP), Private credit by deposit money bank to GDP (%) (FDCP), Deposits money bank assets to GDP (%) (FDA), stock market development (SMD), intermediation ratio (BIR).

### 4.3.2. Multiple Regression Model By Examining the Joint Impact of Explanatory Variables on Performance

This section encompasses the multiple regression results of the joint/combined impact of explanatory variables on banks' profitability (Return on Assets) and efficiency (Efficiency). The panel estimation techniques (common effect model (CEM), fixed effect model (FEM), random effect model (REM), GMM estimation, and quantile regression is applied to determine the impact of combined explanatory variables on the dependent variables.

#### 4.3.2.1. Panel Estimation Techniques

Table 7 (a,b) indicates the joint/combined impact of explanatory variables on dependent variables by applying the panel estimation techniques such as common, fixed, and random effects. The results are obtained after running the regression and then testing the three hypotheses to select the model which is best among the pooled, fixed, and random effects, i.e., (a) BP Lagrange Multiplier H0: CEM is better than REM; (b) Hausman H0: REM is better than FEM; (c) Likelihood Ratio H0: Pooled is better than FEM. The model is selected or rejected based on the p-value. If the p-value of these tests is less than 0.05, this implies a rejection of the null hypothesis and vice-versa. This study found a fixed-effect model (FEM) in both the cases of dependent variables, i.e., ROA and TE.

**Table-7 (a). Panel Estimation Techniques (Return on Assets)**

Models	7a	8a	9a	10a	11a
Variables	BSF+CGF+ CSR_I	BSF+CGF+CS R_I+CR	BSF+CGF+CSR_ I+EFIHF	BSF+CGF+CSR_I+ CR+EFIHF	BSF+CGF+CSR_I+ CR+GC_I
ROA_	0.067	0.075	0.069	0.074	0.066
A(-1)	(0.097)	(0.096)	(0.102)	(0.100)	(0.096)
BNPL	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.000)*	(0.000)*	(0.000)*	(.000)*	(0.000)*
BDEP_	0.005	0.005	0.005	0.005	0.005
A	(0.002)*	(0.001)*	(0.002)*	(0.002)*	(0.002)*
BLOA	0.014	0.014	0.014	0.013	0.013
N_A	(0.002)*	(0.002)*	(0.002)*	(0.002)*	(0.002)*
BCAR	0.000	0.000	0.000	0.000	0.000
	(0.000)**	(0.000)**	(0.000)*	(0.000)*	(0.000)*
BBS	-0.001	-0.002	-0.001	-0.002	-0.001
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
BODS	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
CEOD	-0.001	-0.002	-0.002	-0.002	-0.001
	(0.001)***	(0.001)**	(0.001)**	(0.001)**	(0.001)
CEOW	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.000)*	(0.000)*	(0.001)*	(0.001)*	(0.000)*

WTI_A	-0.004 (0.002)***	-0.004 (0.002)**	-0.004 (0.002)***	-0.004 (0.002)**	-0.003 (0.002)**
OS_A	-0.005 (0.002)*	-0.006 (0.002)*	-0.006 (0.002)*	-0.006 (0.002)*	-0.006 (0.002)*
CSR_I	-0.004 (0.001)*	-0.005 (0.001)*	-0.005 (0.001)*	-0.005 (0.001)*	-0.003 (0.002)**
CR		0.000 (0.000)***		0.000 (0.000)*	0.000 (0.000)***
EFIHF			0.000 (0.000)	0.000 (0.000)	
GC_I					-0.004 (0.003)
FDLL	0.000 (0.000)				
SMD	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*		
GDP	0.000 (0.000)				
INF		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)***	
DD		0.000 (0.000)*	0.000 (0.000)*		
C	0.015 (0.023)	0.023 (0.020)	0.024 (0.019)	0.028 (0.020)	0.025 (0.023)
R-sqr.	0.817	0.818	0.817	0.817	0.817
Adj. R-sqr.	0.767	0.767	0.766	0.767	0.767
DW stat.	1.989	1.983	1.985	1.984	2.003
F-stat.	16.181	16.142	16.097	16.189	16.341
Prob(F-stat.)	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis reports the standard error. Return on Assets (ROA) is used as the dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-specific factors, dimensions of the governance, and environmental factors on ROA. Model 8a exhibits the collective impact of bank-specific factors, governance-related factors, environmental factors, and concentration ratio on ROA. Model 9a represents the joint impact of bank-specific factors, corporate governance factors, environmental factors, and economic freedom index (EFIHF) on ROA. Model 10a reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and economic freedom index with ROA. Model 11a shows the collective impact of CAELs, governance, environmental, market structure, and global competitiveness index with ROA. The control variables used in the analysis include Liquid liabilities to GDP (%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), demand density (DD). R-squared indicates that whatever variation takes place in our model is due to the explanatory variable, i.e., 81.7% and 81.8% in all the models, as in the case of ROA. The p-value of the F-statistics is zero, which implies that the models are statistically fit and significant. Durbin-Watson tells about the auto-correlation among the variables as its value lies between 1.5 to

2.5 in all the models implying no sign of auto-correlation among the predictors. The lagged value of dependent variables (ROA) is insignificant in all the models.

Table-7 (b). Panel Estimation Techniques (Efficiency)

Models	7b	8b	9b	10b	11b
Variab les	BSF+CGF+ CSR_I	BSF+CGF+CS R_I+CR	BSF+CGF+CSR_ I+EFIHF	BSF+CGF+CSR_I+C R+EFIHF	BSF+CGF+CSR_I+ CR+GC_I
TE(-1)	-0.160 (0.075)**	-0.163 (0.073)**	-0.163 (0.073)**	-0.161 (0.074)**	-0.161 (0.075)**
BNPL	0.003 (0.000)*	0.003 (0.000)*	0.003 (0.000)*	0.003 (0.000)*	0.003 (0.000)*
BDEP_ A	-0.188 (0.091)**	-0.171 (0.091)***	-0.172 (0.098)***	-0.177 (0.104)***	-0.180 (0.096)***
BLOA N_A	0.040 (0.052)	0.083 (0.044)***	0.083 (0.041)**	0.061 (0.059)	0.051 (0.049)
BCAR	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)
BBS	-0.038 (.019)**	-0.024 (0.028)	-0.025 (0.028)	-0.040 (0.021)**	-0.033 (0.025)
BODS	0.083 (0.024)*	0.076 (0.028)*	0.077 (0.027)*	0.079 (0.028)*	0.080 (0.027)*
CEOD	0.004 (0.039)	0.006 (0.040)	0.007 (0.041)	0.001 (0.040)	0.004 (0.042)
CEOW	0.041 (0.017)**	0.039 (0.016)*	0.039 (0.015)*	0.041 (0.016)*	0.041 (0.017)*
WTI_A	0.090 (0.033)*	0.104 (0.047)**	0.099 (0.045)**	0.091 (0.031)*	0.099 (0.042)*
OS_A	-0.040 (0.036)	-0.054 (0.040)	-0.053 (0.037)	-0.050 (0.041)	-0.044 (0.037)
CSR_I	-0.024 (0.033)	0.005 (0.040)	0.007 (0.040)	-0.031 (0.023)	-0.023 (0.035)
CR		-0.002 (0.002)		-0.002 (0.002)	-0.002 (0.002)
EFIHF			0.001 (0.003)	0.000 (0.002)	
GC_I					-0.005 (0.053)
FDLL	0.000 (0.001)				
SMD	0.000 (0.000)	0.000 (0.001)	0.000 (0.001)		
GDP	0.003 (0.004)				
INF		0.008 (0.004)**	-0.008 (0.004)**	-0.005 (0.003)	
DD		0.000 (0.000)	0.000 (0.000)		
C	1.541 (0.336)*	1.344 (0.449)	1.235 (0.537)**	1.635 (0.292)*	1.513 (0.318)*
R-sqr.	0.500	0.504	0.503	0.501	0.501
Adj. R- sqr.	0.362	0.362	0.362	0.364	0.364

DW stat.	2.186	2.180	2.179	2.185	2.183
F-stat.	3.629	3.555	3.551	3.643	3.658
Prob(F-stat.)	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Efficiency (TE) is used as a dependent variable. Five models are tested in the regression analysis. Model 7b depicts the joint impact of CAELs, corporate governance, and environmental factors on TE. Model 8b represents the combined impact of CAELs, corporate governance, environmental, and concentration ratio on TE. Model 9b demonstrates the joint impact of CAELs, governance, environmental, and economic freedom index (EFIHF) on TE. Model 10b reveals the combined impact of CAELs, corporate governance, environmental, market structure, and economic freedom index with TE. Model 11b indicates the collective impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and global competitiveness index with TE. The control variables used in the analysis include Liquid liabilities to GDP (%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), demand density (DD). R-squared indicates that how much variation comes in our model is due to the explanatory variable, i.e., 50%, 50.4 %, 50.1%, 50.3%, 50.1%, and 50.1 % in models 7b, 8b, 9b, 10b and 11b respectively as in the case of TE. The p-value of the F-statistics zero in all the models implies that the models are statistically fit and significant. Durbin-Watson is applied to find the auto-correlation among the variables. Its value lies between 1.5 to 2.5 in all the models implying no sign of auto-correlation among the predictors. The lagged value of dependent variables (TE) is significant in all the models.



### **Model -7 to 11 (a,b) – Bank-Specific Factors and Performance**

The study accept the null hypothesis in all the models (7a, 8a, 9a, 10, 11a), which stated that there is a significant and negative relationship of non-performing loans (NPLs) with ROA, while, a significant and positive relation of NPLs exists with efficiency in all the models (7b,8b, 9b, 10b, 11b). The supporters of the findings an inverse relationship of NPLs with bank performance provides justification that the borrowers cannot pay off the loans that stuck the interest and principal amount of the banks. Furthermore, banks use additional resources to monitor these defaulters so that the amount may be recovered from these defaulters to enhance the operational cost. Ultimately, declines bank's performance. The results are align with the studies of Davydenko (2010), Wu and Shen (2013), Islam and Nishiyama (2016), Menicucci and Paolucci (2016), Salike & Ao (2017), Ghosh (2017) and Yao et al. (2018). Conversely, the scholars who posited a significant and positive impact of NPL on efficiency include Raphael (2013) and Belasri et al. (2019).

The study accept the null hypothesis, which stated that there is a significant and positive impact of deposits to total assets on ROA as shown in all the models (7a, 8a, 9a, 10a, 11a), whereas, in these models (7b, 8b, 9b) there exists a significant and negative relation of deposits to total assets with efficiency. The scholars who find a positive relation of deposits with ROA argue that deposits are long-term assets and the banks use these deposits for lending purposes to generate interest revenue that enhances the bank's profitability (Muda et al., 2013; Tan, 2016; Menicucci and Paolucci, 2016; Batir et al., 2017; Ibrahim, 2017; Rodney and Jing, 2018). Conversely, the scholars that observe an inverse relation justify that the banks hold deposits instead of lending with fear and the risk of maturity mismatches or inability to pay back the customers' money. As the banks lend fewer amounts from deposits, it decreases the bank's profitability in interest revenue generation (Davydenko, 2010; Khan et al., 2014; Phan et al., 2018).

The study demonstrate that loans significantly improve profitability, as reflected in all the models (7a, 8a, 9a, 10a, 11a), whereas a significant and positive impact of loans is observed on TE as in the models (8b and 9b). The scholars who find a positive relation of loans with bank performance argue that more lending generates more interest revenues for the banking sector, increasing the banks' profitability. The results are same with the findings of Athanasoglou et al. (2006), Saeed (2014), Tan (2016), Ibrahim (2017), Yao et al. (2018)

Jayati & Subrata (2018), Hasanov et al. (2018) in the case of ROA, whereas Shawtari et al. (2015), Abbas et al. (2016) and Batir et al. (2017) as in the case of TE.

This study reveal that CAR significantly and positively improves ROA as shown in all the models (7a, 8a, 9a, 10a, 11a); however, it insignificantly and negatively influence efficiency as shown in all the models (7b, 8b, 9b, 10b, 11b). Literature that observe a direct link of capitalization with bank profitability supports by the scholars such as Berger (1995), Mensi and Zouari (2010), Saeed (2014), Menicucci & Paolucci (2016), Belhaj and Mateus (2016), Ghosh (2017), Gitau et al. (2017), Yao et al. (2018), Hasanov et al. (2018), Aziz & Knutsen (2019). However, on the other side, an insignificant and negative relationship exists between loans and efficiency.

The study shows a significant and negative relationship between bank size and efficiency, as indicated by the models (7b, 10b). The scholars believe that this relationship exists as the banks may face diseconomies of scales, bureaucratic issues and mismanagement as said by Sathye (2001), Sufian and Habibullah (2010) in Thailand, Shawtari et al. (2015), Lin et al. (2016), and Batir et al. (2017). Contrary to this, an insignificant and negative relationship of bank size is found with ROA and efficiency in all other models.

#### **Model -7 to 11 (a,b) – Corporate Governance and Performance**

The study reports that board size significantly and positively influenced the efficiency, as shown in all the models (7b, 8b, 9b, 10b, 11b). The scholars that are in favour of this argument posit that members of larger boards possess versatile knowledge, skills, abilities, and experience, so their oversight role is more effective. The results are match with the findings of Maria and Sanchez (2010), Salim et al. (2016), and Soba et al. (2016). However, on the other hand, an insignificant and positive relationship of board size is found with ROA in all the models.

The findings indicate that CEO duality significantly deteriorates the profitability (ROA), as reflected in the models (7a, 8a, 9a, 10a). This is because the insiders have much more information and knowledge about the firm than the outsiders, so they use them for their benefit and interest instead of protecting the organization's interests. The researchers that are in favour of this argument include Mesut et al. (2013), Mollah & Zaman (2015), Arora and Sharma (2016), Conyon & He (2017), Farag et al. (2017), Jayati & Subrata (2018) and

Mahmood and Malik (2018) but the scholars that opposed this argument includes Bennouri et al. (2018), Noguera (2020), and Aslam & Haron (2020). Conversely, CEO duality sheds an insignificant and direct influence on efficiency in all the models.

The study shows that CEO women significantly and negatively influence ROA as shown in all the models (7a, 8a, 9a, 10, 11a); however, CEO Women shed a significant and positive influence on efficiency as indicated by the models (7b, 8b, 9b, 10b, 11b). The proponents found a significant and negative relationship provided justification that CEO women are weak in the decision-making process compared to men. The results are inline with the findings of Tomislava et al. (2018), and Aslam & Haron (2020). Conversely, the scholars that found a significant and positive relationship are aligned with social identity theory. The theory asserts that women are hard-working and more intuitive in decision-making than men (Tajfel & Turner, 1979; Kramer et al., 2016).

The study implies a significant and negative relationship of the percentage of women on board with ROA as reflected in all the models (7a, 8a, 9a, 10a, 11a). This is in accordance with the tokenism theory by argues that firms enter women on board to meet the regulations prevailing in the country. Their role on the board is just like a token (showpiece). Token women may face three types of fear: visibility, polarization, and assimilation (Kanter, 1977). They may feel the pressure of giving value to their voice, face social isolation, and be declared clichéd categories by the majority groups on the board. The results are align with the previous studies such as Kilic (2015), Tomislava et al. (2018) but in opposiste to the findings of Conyon & He (2017), Green & Homroy (2017), Gordini & Rancati (2017), Reguera-Alvarado et al. (2017), Andersson & Wallgren (2018), Ullah et al. (2020), and Bennouri et al. (2018). Conversely, the results are significant and positive in the case of efficiency, as shown in all the models (7b, 8b, 9b, 10b, 11b). The results are aligned with a critical mass theory which exhibits that women's involvement in the board can enhance governance and efficiency, improve decision making, decrease agency conflict and increase bank performance (Maria & Sanchez, 2010; Chan & Heang, 2010; Kramer, Konrad, Erkut, & Hooper, 2016).

The study found a significant and negative relationship between foreign ownership and ROA, as reflected in all the models (7a, 8a, 9a, 10a, 11a). The previous scholars that backed this argument include Jensen and Szulanski (2004), Olweny and Shipho (2011),

Mamatzakis et al. (2017), Gordini & Rancati (2017) and Aslam & Haron (2020) but in contradiction to the findings of Herdjiono & Sari (2017), Jayati & Subrata (2018), and Rashid (2020). Contrary to this, an insignificant and negative relationship exists between foreign ownership and efficiency, as shown in all the models (7b, 8b, 9b, 10b, 11b).

#### **Model -7 to 11 (a,b) – Corporate Social Responsibility Disclosure and Performance**

This study demonstrate that the CSR disclosure index significantly and negatively influences ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). This is because of agency theory imply that the managers responsibility is only to protect the interests of shareholders and companys profits and doing anything extra is the wastage of resources. The previous studies that are in line with the findins of this study includes Taskin (2015), Moslemany and Etab (2017), Oyewumi et al. (2018) but in opposite to the results of Alipour et al. (2019), Szegedi et al. (2020), Alareeni and Hamdan (2020). Conversely, an insignificant relation is observed in the case of efficiency.

#### **Model -7 to 11 (a,b) – Market Structure and Performance**

The study report a significant and positive impact of concentration ratio on ROA as indicated by the models (8a, 10a, 11a), and the results match with the findings of Naceur and Kandil (2009); Sufian and Habibullah (2010); Talaso (2015), Niklas and Rasmus (2016) and Aziz & Knutsen (2019) but in contradiction to the results of Doumposa et al. (2017), Yao et al. (2018). This results are align with structure conduct performance hypothesis, market power hypothesis and efficient structure hypothesis. Conversely, the concentration ratio shed an insignificant and negative relationship with efficiency.

#### **Control Variables and Performance**

This study found that stock market development and inflation shed a direct impact on ROA, whereas the results are insignificant as in the case of efficiency. However, mixed inflation results are obtained, as in the case of ROA and efficiency.

### 4.3.2.2. GMM Estimation Technique

This study also employed the system GMM estimation technique initiated by Arellano-Bover/Blundell-Bond as the above analysis includes the problem of endogeneity, heteroscedasticity, autocorrelation, and multicollinearity and normality. The scholars who used the same technique in the literature include Aziz and Knutsen (2019), Varnita, Niladri, and Kanta (2018), and Maqbool and Zameer (2018), Zheng et al. (2017). The condition for the application of GMM is (i) when the time period is shorter than the number of groups ( $T < N$ ); (ii) Validity of instruments by applying the Sargan/Hansen test; (iii) absence of autocorrelation at AR (2) by applying Arellano-Bond test. The insignificant value of the Sargan/Hansen test is an indicator of the instrument's validity. This implies that instruments are not correlated with residuals. Similarly, the insignificant value of AR (2) means the absence of autocorrelation in the residuals. Table 7 (c,d) depicts the impact of multiple explanatory variables on ROA and DEA efficiency by using GMM. The lagged values of dependent variables are used as instruments while conducting the analysis.

**Table-7(c). GMM Estimation Technique (Return on Assets)**

Models	7a	8a	9a	10a	11a
Variable	BSF+CGF+CSR_I	BSF+CGF+CSR_I+CR	BSF+CGF+CSR_I+EFIHF	BSF+CGF+CSR_I+CR+EFIHF	BSF+CGF+CSR_I+CR+GC_I
ROA <sub>-1</sub>	0.282	0.140	0.441	0.736	0.289
A(-1)	(0.128)**	(0.332)	(0.040)*	(0.306)**	(0.134)**
BNPL	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.000)*	(0.000)*	(0.000)*	(0.000)*	(0.000)*
BDEP <sub>-1</sub>	0.007	0.006	0.008	0.011	0.006
A	(0.003)**	(0.004)	(0.003)**	(0.006)**	(0.003)**
BLOA	0.012	0.013	0.009	0.006	0.011
N <sub>-1</sub>	(0.002)*	(0.005)*	(0.002)*	(0.004)	(0.002)*
BCAR	0.000	0.000	0.000	0.000	0.000
	(0.000)*	(0.000)*	(0.000)**	(0.000)***	(0.000)*
BBS	-0.001	-0.002	-0.002	-0.003	-0.001
	(0.002)	(0.001)**	(0.002)	(0.002)**	(0.001)
BODS	0.000	0.000	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
CEOD	-0.002	-0.002	-0.002	-0.002	-0.001
	(0.001)	(0.001)**	(0.001)	(0.001)	(0.001)
CEOW	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)*	(0.001)*	(0.001)*	(0.001)**	(0.001)*
WTI <sub>-1</sub>	-0.002	-0.004	-0.001	0.000	-0.002
	(0.001)***	(0.004)	(0.002)	(0.002)	(0.001)
OS <sub>-1</sub>	-0.004	-0.005**	-0.003	-0.001	-0.004
	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)***
CSR <sub>-1</sub>	-0.004	-0.005	-0.003	-0.003	-0.003
	(0.001)*	(0.001)*	(0.001)**	(0.002)**	(0.002)***

CR		0.000 (0.000)		0.000 (0.000)	0.000 (0.000)***
EFIHF			0.000 (0.000)	0.000 (0.000)	
GC_I					-0.003 (0.003)
SMD	0.000 (0.000)**	0.000 (0.000)*			
GDP	0.000 (0.000)				
INF		0.000 (0.000)		0.000 (0.000)	
C	0.016 (0.025)	0.023 (0.017)	0.024 (0.023)	0.029 (0.026)	0.024 (0.025)
R-sqr.	0.809	0.817	0.791	0.742	0.809
Adj. R-sqr.	0.756	0.766	0.734	0.671	0.756
DW Stat.	2.321	2.085	2.544	2.342	2.342
J-stat.	7.039	1.186	6.045	4.221	5.827
Prob(J-stat.)	0.134	0.756	0.196	0.239	0.212
AR(1)	0.224	0.204	0.509	0.300	0.170
AR(2)	0.986	0.931	0.3512	0.820	0.890

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis reports the standard error. Return on Assets (ROA) is used as the dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-specific factors, corporate governance, and environmental factors on ROA. Model 8a demonstrates the joint impact of bank-specific factors, corporate governance, environmental, and market structure on ROA. Model 9a represents the joint impact of bank-specific factors, corporate governance factors, environmental factors (CSR\_I), and economic freedom index (EFIHF) on ROA. Model 10a reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and economic freedom index with ROA. Model 11a shows the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and global competitiveness index with ROA. The control variables used in the analysis include stock market development (SMD), gross domestic product (GDP), and Inflation (INF). R-squared indicates that whatever variation in our model is due to the explanatory variable. i.e. 80.9%, 81.7%, 79.1%, 74.2%, and 80.9% as in the case of ROA. J-statistic indicates whether the instruments used in the study are valid or not. As the p-value of J-statistics is greater than 0.10 in all the models, the instruments used in the study are valid. Similarly, the p-value of AR (2) is insignificant and greater than 0.05; this hails the absence of auto-correlation in all the models. The lagged value of dependent variables (return on assets) is significant in all the models.

Table-7(d).GMM Estimation Technique (Efficiency)

	7b	8b	9b	10b	11b
Variable	BSF+CGF+ CSR_I	BSF+CGF+CS R_I+CR	BSF+CGF+CSR_ I+EFIHF	BSF+CGF+CSR_I+C R+EFIHF	BSF+CGF+CSR_I+ CR+GC_I
TE(-1)	-0.559 (0.124)*	-0.242 (0.332)	-0.178 (0.281)	-0.038 (0.250)	-0.868 (0.254)*
BNPL	0.003 (.001)*	0.003 (0.001)**	0.003 (0.001)*	0.002 (0.001)*	0.006 (0.001)*
BDEP_ A	-0.201 (0.101)**	-0.181 (0.105)***	-0.183 (0.104)***	-0.173 (0.114)	-0.217 (0.153)
BLOA	0.086 (0.042)**	0.063 (0.064)	0.049 (0.052)	0.052 (0.061)	0.113 (0.065)***
N_A	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.002)	-0.002 (0.003)	0.003 (0.002)
BCAR	-0.017 (0.020)	-0.039 (0.022)***	-0.036 (0.016)**	-0.045 (0.026)***	0.008 (0.013)
BBS	0.095 (0.029)*	0.080 (0.036)**	0.084 (0.027)*	0.076 (0.023)*	0.094 (0.043)**
BODS	-0.002 (0.050)	0.001 (0.047)	0.003 (0.041)	0.004 (0.034)	-0.007 (0.067)
CEOD	0.052 (0.009)*	0.043 (0.021)**	0.042 (0.011)*	0.037 (0.020)***	0.062 (0.012)*
CEOW	0.087 (0.028)*	0.090 (0.033)*	0.091 (0.028)*	0.092 (0.030)*	0.099 (0.044)**
WTI_A	-0.064 (0.037)***	-0.055 (0.034)	-0.041 (0.028)	-0.042 (0.049)	-0.094 (0.054)***
OS_A	-0.041 (0.034)	-0.035 (0.036)	-0.026 (0.009)*	-0.024 (0.029)	-0.047 (0.052)
CSR_I					
CR		-0.002 (0.002)		-0.002 (0.002)	-0.002 (0.002)
EFIHF			0.000 (0.003)	0.000 (0.002)	
GC_I					-0.067 (0.031)**
SMD	0.000 (0.000)	0.000 (0.000)			
GDP	-0.011 (0.015)				
INF		-0.005 (0.004)		-0.005 (0.003)	
C	1.466 (0.319)*	1.686 (0.259)*	1.474 (0.356)*	1.632 (0.289)*	
R-sqr.	0.419	0.498	0.500	0.494	0.246
Adj. R- sqr.	0.260	0.359	0.364	0.354	0.040
DWstat	1.679	2.058	2.158	2.384	1.530
J-stat.	2.270	1.601	1.869	2.374	1.984

Prob(J-stat.)	0.686	0.206	0.600	0.305	0.739
AR(1)	0.747	0.604	0.402	0.390	0.079
AR(2)	0.156	0.843	0.799	0.920	0.880

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Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis exhibits the standard error. Efficiency (TE) is used as a dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-specific factors, corporate governance factors, and environmental factors on TE. Model 8a represents the joint impact of bank-specific factors, corporate governance, environmental, and market structure on TE. Model 9a reveals the collective impact of bank-specific factors, corporate governance factors, environmental factors, and economic freedom index on TE. Model 10a indicates the combined impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and economic freedom index with TE. Model 11a shows the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and global competitiveness index with TE. The control variables used in the analysis include stock market development (SMD), gross domestic product (GDP), and Inflation (INF). R-squared shows that whatever variation takes place in our model is due to the explanatory variable, i.e., 47.2%, 49.8%, 50%, 49.4%, and 24.6%, as in the case of efficiency. J-statistic is applied to check the instrument's validity. As the p-value of J-statistics is greater than 0.10 in all the models, the instruments used in the study are valid. Similarly, the p-value of AR (2) is insignificant and greater than 0.05; this hails the absence of auto-correlation in all the models. The lagged value of dependent variables (TE) is significant only in models 7b and 11b.



### **Model -7 to 11 (a,b) – Bank-Specific Factors and Performance**

The empirical findings indicate that non-performing loans (NPLs) significantly and adversely influence ROA as reflected in the models (7a, 8a, 9a, 10a, 11a), whereas a statistically significant and positive relationship is observed in the efficiency as shown in these models (7b, 8b, 9b, 10b, 11b). The scholars who found a statistically significant and inverse relationship of NPLs with ROA include Nisar et al. (2015), Djalilov and Piesse (2016), Salike & Ao (2017) and Yao et al. (2018). Conversely, the literature favouring positive relationships of NPLs with efficiency includes Raphael (2013), Phung et al. (2018) and Belasri et al. (2019) in developed countries.

Similarly, the empirical findings indicate a positive and significant association of deposit with ROA as shown in these models (7a, 9a, 10a, 11a), whereas it adversely and significantly influences efficiency as indicated by the models (7b,8b,9b). The scholars who found a positive relationship of deposits with ROA include Muda, Uddin, and Embaya (2013), Menicucci and Paolucci (2016), Mumtaz and Sajjad (2017), and Rodney and Jing (2018). Conversely, the literature favouring a significant and inverse relationship with efficiency includes Davydenko (2010) and Phan et al. (2018).

The study accept the null hypothesis, which stated a significant and positive relationship of loans with ROA as shown in models (7a, 8a, 9a, 11a). The results are aligned with Ayanda, Christopher, and Mudashiru (2013), Tan (2016), Ibrahim (2017) and Hasanov et al. (2018), but in contrast to Sufian and Habibullah (2010), Davydenko (2010) and Djalilov and Piesse (2016). Conversely, the scholars statistically found a significant and positive relationship between loans and efficiency as in models (7b, 11b). The findings are in accordance with the studies of Chortareas et al. (2013), Dharmendra and Bashir (2015), Abbas et al. (2016) and Batir et al. (2017) but in contradiction to the Tan and Floros (2013).

The analysis suggests a significant and positive influence of capital ratio with ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are aligned with Naceur and Omran (2010), Shahabadi and Samari (2013), Nisar et al. (2015) and Yao et al. (2018). Conversely, the results are insignificant and positive in the case of efficiency in all the models.

The result exhibits a significant and inverse association of bank size with ROA, as reflected in the models (8a, 10a). This is because of economies of scale, more market power, ease of obtaining equity, etc. The results are consistent with Raza et al. (2013), Doumpos et al. (2017) and Zheng et al. (2017). Conversely, the bank size is a statistically significant and negative impact on efficiency, as shown in the models (8b, 9b, 10b). The previous scholars that backed this argument include Batir et al. (2017) and Lin et al. (2016).

#### **Model -7 to 11 (a,b) – Corporate Governance and Performance**

The study accept the null hypothesis, which stated a significant and positive impact of board size on TE as shown in all the models (7b, 8b, 9b, 10b, 11b). This matched with the results of Maria and Sanchez (2010), Salim et al. (2016) and Soba et al. (2016) but in contrast to Beate and Gro (2010). However, on the other hand, the results are insignificant, as in the case of ROA as reflected in all the models (7a, 8a, 9a, 10a, 11a).

The study found that CEO duality shed a significant and negative impact on ROA in model 8a. This implies that duality creates a conflict of interest and makes managerial monitoring ineffective. This agrees with the agency theory. The previous scholars that backed this argument include Mollah and Zaman (2015), Ahmadi et al. (2017), Mahmood and Malik (2018), Bennouri et al. (2018), Jayati and Subrata (2018) and Noguera (2020).

The study found that CEO women have a significant and negative impact on ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are in accordance with Maria and Sanchez (2010), Ionascu et al. (2018), Bennouri et al. (2018) and Ullah et al. (2020) but in opposite to the findings of Aslam & Haron (2020). Contrary to this, CEO women significantly positively influence efficiency, as shown in the model (7b, 8b, 9b, 10b, 11b). The results are aligned with Kramer et al. (2016) but opposite to Yasir et al. (2014) and Tomislava et al. (2018).

The study revealed that the percentage of women on board shed a significant and negative impact on ROA, as shown in model 7a. This agrees with the tokenism theory. The results are in line with Ujunwa (2012), Salim (2013), and Conyon and He (2017) but in contrast to Varnita et al. (2018); Andersson and Wallgren (2018). However, on the other side, the percentage of women on board is found to have a significant and positive relationship

with efficiency, as indicated by the models (7b, 8b, 9b, 10b, 11b). This is consistent with critical mass theory and social identity theory. The results align with Beate and Gro (2010) and Chan and Heang (2010).

The empirical findings suggest that foreign ownership shed a significant and negative relationship with ROA, as shown in model (8a, 11a). This contradicts the global field advantage hypothesis. The previous scholars that backed this argument include Olweny and Shipho (2011), Herdjiono & Sari (2017), Jayati & Subrata (2018), and Rashid (2020). Conversely, the results are significant and negative in the case of efficiency, as shown in models (7b, 11b). The findings align with Sathye (2001) and Raphael (2013) but in contrast to the results of Hasanul et al. (2017), and Phung et al. (2018).

#### **Model -7 to 11 (a,b) – Corporate Social Responsibility Disclosure Index and Performance**

The empirical findings indicate that the CSR disclosure index significantly influences ROA. It adversely affects ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are consistent with Taskin (2015), Moslemany, and Etab (2017) but in contrast to Weber (2017), Charumathi and Ramesh (2017), Gangi et al. (2018), Maqbool & Zameer (2018), and Alareeni and Hamdan (2020). However, on the other hand, the results are significant and negative, as in the case of efficiency, as shown in the model (9b). The previous studies that are matched with the findings of this study includes Forgione et al. (2020); Fahad and Busru (2021) but in opposite to Zhu et al. (2017) and Belasri et al. (2019)

#### **Model -7 to 11 (a,b) – Market Structure and Performance**

The analysis suggests a significant and direct impact of concentration ratio on ROA, as shown in model 11a. The results are in line with Bourke (1989), Naceur and Omran (2010), and Talaso (2015) and Aziz & Knutsen (2019). Conversely, the results are insignificant in the case of efficiency, as shown in all the models.

#### **Model -7 to 11 (a,b) – Institutional Factors and Performance**

The scholar found a significant and negative impact of the global competitiveness index on efficiency, as shown in model 11b. The results are in line with Asma & Hadeel

(2017), Emmanuel et al. (2017), but in opposite to Chan & Karim (2016), Bitar et al. (2018), and Asteriou et al. (2021). Conversely, the results are insignificant, as in the case of ROA.

### 4.3.2.3. Quantile Regression

Table 7 (e,f) indicates the joint/combined impact of explanatory variables on dependent variables by applying the quantile regression with respect to ROA and TE.

**Table- 7(e). Quantile Regression (Return on Assets)**

Models	7a	8a	9a	10a	11a
Variables	BSF+CGF+ CSR_I	BSF+CGF+CS R_I+CR	BSF+CGF+CSR_ I+EFIHF	BSF+CGF+CSR_I+ CR+EFIHF	BSF+CGF+CSR_I+ CR+GC_I
BNPL	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*
BDEP_ A	0.002 (0.002)	-0.001 (0.002)	-0.003 (0.002)**	-0.001 (0.001)	0.002 (0.002)
BLOA N_A	-0.005 (0.001)*	-0.003 (0.001)**	-0.001 (0.002)	0.001 (0.001)	-0.002 (0.001)
BCAR	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*
BBS	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.001 (0.000)*
BODS	0.002 (0.001)*	0.001 (0.000)**	0.001 (0.000)	0.001 (0.000)***	0.000 (0.000)
CEOD	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)
CEOW	-0.001 (0.000)**	-0.001 (0.000)*	-0.001 (0.000)	-0.001 (0.001)***	-0.001 (0.000)**
WTI_A	-0.005 (0.001)*	-0.005 (0.001)*	-0.004 (0.001)*	-0.005 (0.001)*	-0.003 (0.001)*
OS_A	0.002 (0.001)**	0.003 (0.001)*	0.002 (0.001)*	0.002 (0.001)*	0.002 (0.001)*
CSR_I	0.000 (0.001)	0.003 (0.001)*	0.003 (0.001)*	0.003 (0.001)*	0.000 (0.001)
CR		0.000 (0.000)*		0.000 (0.000)*	0.000 (0.000)*
EFIHF			0.000 (0.000)*	0.000 (0.000)*	
GC_I					-0.005 (0.000)*
FDLL	0.000 (0.000)*				
SMD	0.000 (0.000)*	0.000 (0.000)*			
GDP	0.000 (0.000)				
INF		0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)*	
DD		0.000 (0.000)			
C	-0.009 (0.002)*	-0.010 (0.003)*	-0.003 (0.003)	-0.002 (0.003)*	0.008 (0.002)*

Pseudo R-sqr	0.323	0.303	0.299	0.313	0.349
Adj. R-sqr	0.314	0.293	0.290	0.304	0.340
Quasi-LR stat.	985.433	847.236	824.840	938.785	1164.766
Prob(Q uasi-LR stat)	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Return on Assets (ROA) is taken as the dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-related factors, governance factors, and environmental factors on ROA. Model 8a demonstrates the combined impact of bank-related factors, governance factors, environmental factors, and market structure with ROA. Model 9a represents the combined impact of bank-related factors, governance factors, environmental factors, and economic freedom index with ROA. Model 10a indicates the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and the economic freedom index (EFIHF) with ROA. Model 11a shows the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and the global competitiveness index (GC\_I) with ROA. The control variables used in the analysis include Liquid liabilities to GDP (%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), demand density (DD). Pseudo R-squared indicates that whatever variation in our model is due to the explanatory variable, i.e., 32.3%, 30.3%, 29.9%, 31.3%, and 34.9%, respectively, in all these models. The p-value of the quasi LR-statistics is zero in all the models, which exhibits that the models are statistically fit and significant.

Table-7 (f): Quantile Regression (Efficiency)

Models	7b	8b	9b	10b	11b
Variab les	BSF+CGF+ CSR_I	BSF+CGF+CS R_I+CR	BSF+CGF+CSR_ I+EFIHF	BSF+CGF+CSR_I+ CR+EFIHF	BSF+CGF+CSR_I+ CR+GC_I
BNPL	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)
BDEP_ A	-0.092 (0.079)	-0.079 (0.075)	-0.035 (0.079)	-0.036 (0.080)	-0.107 (0.078)
BLOA	0.184	0.207	0.214	0.213	0.160
N_A	(0.078)**	(0.072)*	(0.068)*	(0.070)*	(0.069)**
BCAR	-0.002 (0.003)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
BBS	-0.006 (0.007)	0.002 (0.006)	0.000 (0.005)	0.001 (0.005)	0.002 (0.007)
BODS	0.003 (0.022)	-0.016 (0.020)	-0.020 (0.019)	-0.021 (0.020)	-0.002 (0.0200)
CEOD	-0.059 (0.020)*	-0.054 (0.019)*	-0.060 (0.019)*	-0.060 (0.019)*	-0.055 (0.020)*
CEOW	-0.033 (0.030)	-0.017 (0.029)	-0.016 (0.030)	-0.016 (0.030)	-0.031 (0.030)
WTI_A	0.108 (0.053)**	0.097 (0.048)**	0.091 (0.051)***	0.091 (0.051)***	0.100 (0.048)**
OS_A	0.009 (0.042)	-0.004 (0.041)	-0.017 (0.039)	-0.018 (0.039)	-0.004 (0.040)
CSR_I	-0.079 (0.039)**	-0.088 (0.033)*	-0.064 (0.032)**	-0.064 (0.032)**	-0.090 (0.036)*
CR		-0.002 (0.001)***		0.000 (0.001)	-0.001 (0.001)
EFIHF			-0.004 (0.002)*	-0.004 (0.002)*	
GC_I					0.001 (0.021)
FDLL	0.000 (0.000)				
SMD	0.000 (0.000)	-0.001 (0.000)			
GDP	0.012 (0.005)*				
INF		-0.009 (0.005)**	-0.011 (0.005)**	-0.011 (0.005)**	
DD		0.000 (0.000)*			
C	0.866 (0.143)*	1.016 (0.143)*	1.153 (0.151)*	1.153 (0.155)*	0.928 (0.132)*
Pseudo R-sqr.	0.031	0.035	0.035	0.035	0.027
Adj. R- sqr.	0.018	0.021	0.022	0.021	0.015
Quasi- LR stat.	38.803	45.084	44.308	44.331	33.735

Prob(Q uasi-LR stat)	0.000	0.000	0.000	0.000	0.001
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Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. Efficiency (TE) is used as the dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-specific factors, corporate governance factors, and environmental factors on TE. Model 8a reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, and market structure with TE. Model 9a demonstrates the joint impact of bank-specific factors, corporate governance factors, environmental factors, and economic freedom index (EFIHF) with TE. Model 10a indicates the combined impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and economic freedom index with TE. Model 11a shows the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and the global competitiveness index with TE. The control variables used in the analysis include Liquid liabilities to GDP(%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), demand density (DD). Pseudo R-squared indicates that how much variation comes in our model is due to the explanatory variable, i.e. 3.1%, 3.5%, 3.5%, 3.5%, and 2.7%, respectively. The p-value of the quasi LR-statistics is zero in all the models, which exhibits that the models are statistically fit and significant. The values of low r square do not matter when we determine the impact of explanatory variables on bank efficiency by applying the quantile regression. This is because of several deficiencies highlighted in calculating the efficiency score through data envelopment analysis; the outlier's most significant issue is that it cannot be detected by conducting diagnostic tests on residuals (ii) It ignores the prices of inputs and outputs (iii) It ignores the random errors (measurement errors, good or bad luck) and considers all deviations from the frontier as inefficient. Ultimately, this will overstate the inefficiency if noise is present (iv) A strong correlation exists between inputs and outputs in the first stage of DEA. Finally, the results obtained by regressing the explanatory variables with efficiency scores in the second stage are biased. Secondly, the value of low r square does not matter in the quantile regression as it elaborates the significant values of each variable at different levels of quantiles such as 25th, 50th, or 75th percentile, etc. Several scholars observed low values of r squares in their studies, including Mazzotta and Ferraro (2020), Belasri et al. (2019), Alipour et al. (2019), Meah and Chaudhory (2019), Owen and Temesvary (2018), Andries et al. (2018), Mamatzakis et al. (2017), Arora and Sharma (2016), Ramly et al. (2015) by applying different estimation techniques.



### **Model - 7 to 11 (a,b) – Bank-Specific Factors and Performance**

The study accept the null hypothesis, which stated a significant and negative relationship between non-performing loans (NPLs) and ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are aligned with the bad management hypothesis and bad luck hypothesis. The bad management hypothesis assumed that management is considered inefficient if they have a wrong client choice, incompetent in assessing the value of collateral for the loans, and ineffective in monitoring borrowers. Similarly, the bad luck hypothesis postulates that external factors adversely affect the loan quality of the firm; therefore, management spends additional resources to recover the toxic loans from the borrowers, which increases the operational cost and undermines the performance (Berger & DeYoung, 1997). The previous scholars who found an inverse relationship between NPL and ROA include Nisar et al. (2015), Islam and Nishiyama (2016), Salike & Ao (2017), and Yao et al. (2018). Conversely, the results are insignificant as in the case of efficiency.

The study found a significant and negative impact of deposits to total assets on ROA, as shown in model 9a. The results are aligned with Khan et al. (2014).

The analysis indicates a significant and negative influence of loans on ROA, as shown in models 7a and 8a. The results are aligned with the findings of Belhaj and Mateus (2016), Sufian and Habibullah (2010), Davydenko (2010), and Belhaj & Mateus (2016). Conversely, the loans have a significant and positive impact on efficiency, as shown in these models (7b, 8b, 9b, 10b, 11b). The previous studies favour findings with a significant and positive relationship of loans with efficiency, including Raphael (2013), Shawtari et al. (2015), Abbas et al. (2016), Sufian et al. (2016) and Batir et al. (2017).

The study reported a significant and direct relationship of capital ratio with ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are in accordance with the findings of Naceur and Kandil (2009), Athanasoglou et al. (2006); Gitau et al. (2017); Yao et al. (2018), but in contrast to the findings of Bitar et al. (2018) and Zheng et al. (2017). Conversely, the results are insignificant and negative, as shown in all the models and the case of efficiency.

The study revealed a significant and positive relationship of bank size with ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a), and justifies that larger banks enjoy the benefits of economies of scale, more market power, ease of obtaining equity at shorter notice, raise debt at lower cost, broader asset diversification, efficient intermediation, effective monitoring and supervision, better risk management, etc. These factors imply that a bank faces less volatile earnings, reduces default risk, and enhances bank performance. The scholars that are in favour of this relationship include Naceur and Kandil (2009), Zheng et al. (2017), Tomislava et al. (2018), Yao et al. (2018) and Aziz and Knutsen (2019). Conversely, the results are insignificant, as shown in all the modes with respect to efficiency.

#### **Model - 7 to 11 (a,b) – Corporate Governance and Performance**

The empirical findings of the study observed that BoDs shed a significant and positive impact on ROA, as shown in all the models (7a, 8a, 10a). This implies that a member of a larger board possesses vast knowledge, skills, and experience to monitor and manage the company's affairs effectively, ultimately enhancing performance. The results align with the analysis of Herdjiono and Sari (2017) in Indonesia, Farag et al. (2017), Gordini & Rancati (2017), Andersson and Wallgren (2018), Mahmood and Malik (2018), Bennouri et al. (2018), Merendino & Melville (2019) and Riyadh et al. (2019). Conversely, the results are insignificant, as shown in all the models with respect to efficiency.

The study found that CEO duality has a significant and positive impact on ROA statistically, as shown in the models (7a, 8a, 9a, 10a, 11a). The results are in line with stewardship theory. It assumes that the insiders have a better knowledge about the firm than outsiders, which ultimately leads to better decisions and makes monitoring effective. Hence, bank performance improves. The scholars that are in favour of this argument include Kiel and Nicholson (2003), Arouri et al. (2011), and Belhaj and Mateus (2016), Ahmadi et al. (2017), Bennouri et al. (2018), Noguera (2020). Conversely, the CEO duality shed a significant and negative impact on efficiency, as shown in all the models (7b, 8b, 9b, 10b, 11b). This is because of agency theory, as it assumes that duality makes managerial monitoring ineffective and undermines the performance of the banking sector. The scholars that are in support of this argument include Maria and Sanchez (2010).

The study found that gender diversity (CEO women and presence of women on board) deteriorates ROA, as shown in these models (7a, 8a, 9a, 10a, 11a). The results are matched with tokenism theory. This implies that women's roles on the board or the executive seats are like showpieces or tokens. Tokens women may face different fears such as visibility, polarization, and assimilation (Kanter, 1977). These fears shatter the confidence of women to make the right, and timely decisions, hence declining bank profitability. This further implies that banks entering women on the board are just like fulfilling the regulations instead of breaking the glass ceiling. The scholars that are in favour of this argument include Yasir et al. (2014), Ghosh (2017), Tomislava et al. (2018), Mohammad et al. (2018), and Aslam & Haron (2020) but in contrast to the results of Johl et al. (2015) and Conyon and He (2017). Conversely, the percentage of women on board is statistically significant and positive, as shown in all the models (7b, 8b, 9b, 10b, 11b) with respect to efficiency. The previous literature that supports this argument includes Maria and Sanchez (2010), Beate and Gro (2010), Chan and Heang (2010), and Kramer et al. (2016).

The study accept the null hypothesis, which stated a statistically significant and positive relationship between foreign ownership and ROA, as shown in all the models (7a, 8a, 9a, 10a, 11a). The results are align with the findings of Hasanul et al. (2017); Phung et al. (2018). Conversely, the results are insignificant, as shown in all the models and the case of efficiency.

#### **Model - 7 to 11 (a,b) – Corporate Social Responsibility Disclosure Index and Performance**

The study found a significant and positive impact of CSR disclosure on ROA statistically, as shown in models (8a, 9a, 10a). This is because of stakeholder theory. The scholars that are in favour of the findings that there is a positive relationship of CSR disclosure with ROA include Gangi et al. (2018) in EU banks, Mahmood and Malik (2018), Maqbool and Zameer (2018), Weber (2017) in China, Ashraf et al. (2017), Alipour et al. (2019), Szegedi et al. (2020) and Alareeni and Hamdan (2020). Conversely, CSR disclosure significantly influences efficiency, as shown in all the models (7b, 8b, 9b, 10b, 11b). This is because of agency theory which posits that firms' aim is only to safeguard shareholders' expectations and wealth maximization. This further emphasizes that investment in CSR

increases the additional cost and undermines the performance (Moslemany & Etab, 2017; Forgione et al., 2020; Fahad and Busru, 2021).

#### **Model -7 to 11 (a,b) – Market Structure and Performance**

The study found a significant and positive impact of concentration ratio on ROA, as shown in the models (8a, 10a, 11a). This matched with the results of Bourke (1989), Samad (2008); Sufian and Habibullah (2010) in Indonesia; Niklas and Rasmus (2016); Aziz and Knutsen (2019) in Arab countries. Conversely, the results are significant and negative, as shown in model 8b in the case of efficiency. The results are consistent with the findings of Hicks (1935), Berger and Hannan (1998), Sathye (2001), Tan and Floros (2013), Lin et al. (2016), and Abbas et al. (2016).

#### **Model -7 to 11 (a,b) – Institutional Factors and Performance**

The study found a significant and positive impact of the economic freedom index on ROA, as shown in models 9a and 10, whereas the global competitiveness index declines ROA, as shown in model 11a. The scholars finding a positive relationship of institutional factors with ROA include Naceur and Omran (2010), Sufian and Habibullah (2010) in Malaysia, Bitar et al. (2018), Aziz and Knutsen (2019), Arias et al. (2019), Mavrakana & Psillaki (2019) and Asterious et al. (2021). Contrary to this, a significant and negative impact of the economic freedom index is observed with TE, as shown in models 9b and 10b. The results are aligned with Asma and Hadeel (2017) and Emmanuel et al. (2017).

#### **Control Variables and Performance**

The study found that financial sector development and inflation shed a significant and positive impact on ROA. However, GDP and demand density have a significant and positive influence on efficiency, whereas inflation influences efficiency significantly and negatively.

#### **Quantile Regression Process**

Tables 7 (g,h) indicate a quantile regression process of each variable at 25%, 50%, and 75% quantile levels. They tell us about the significant values of each variable at different

levels of quantiles. Further, they explain whether the significant value of explanatory variables at lower quantile varies from that at high quantile.

**Table- 7(g). Quantile Regression Process at 25%, 50% and 75% (Return on Assets)**

Models		7a	8a	9a	10a	11a
Variab les	Quan tile	BSF+CGF+ CSR_I	BSF CGF+CSR I+CR	BSF+CGF+CSR _I+EFIHF	BSF+CGF+CSR_I+ CR+EFIHF	BSF+CGF+CSR_I +CR+GC_I
BNPL	0.25	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*
	0.50	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)*
	0.75	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)**	-0.001 (0.000)*
BDEP_ A	0.25	0.003 (0.002)**	0.000 (0.002)	-0.002 (0.002)	0.000 (0.000)	0.004 (0.001)*
	0.50	0.002 (0.002)	-0.001 (0.002)	-0.003 (0.002)**	-0.001 (0.001)	0.002 (0.002)
	0.75	0.002 (0.002)	-0.001 (0.002)	-0.003 (0.002)***	-0.001 (0.002)	0.001 (0.001)
BLOA N_A	0.25	-0.006 (0.002)*	-0.002 (0.002)	0.001 (0.002)	0.000 (0.002)	-0.003 (0.001)*
	0.50	-0.005 (0.001)*	-0.003 (0.001)**	-0.001 (0.002)	0.001 (0.001)	-0.002 (0.001)
	0.75	-0.004 (0.002)**	-0.002 (0.001)	0.000 (0.002)	0.002 (0.002)	0.001 (0.001)
BCAR	0.25	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*
	0.50	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*
	0.75	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*
BBS	0.25	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)*	0.001 (0.000)*
	0.50	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	0.001 (0.000)*
	0.75	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*
BODS	0.25	0.001 (0.001)**	0.001 (0.001)	0.000 (0.001)	0.000 (0.000)	0.000 (0.001)
	0.50	0.002 (0.001)*	0.001 (0.000)**	0.001 (0.000)	0.001 (0.000)**	0.000 (0.000)
	0.75	0.002 (0.000)*	0.001 (0.001)**	0.000 (0.001)	0.001 (0.001)	0.001 (0.000)
CEOD	0.25	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)**	0.000 (0.000)

	0.50	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)
	0.75	0.001 (0.000)*	0.002 (0.000)*	0.002 (0.000)*	0.001 (0.000)*	0.001 (0.000)***
CEOW	0.25	-0.001 (0.001)**	-0.001 (0.000)**	-0.001 (0.000)*	-0.001 (0.000)*	-0.001 (0.000)
	0.50	-0.001 (0.000)**	-0.001 (0.000)*	-0.001 (0.000)	-0.001 (0.001)***	-0.001 (0.000)**
	0.75	-0.001 (0.000)	-0.001 (0.001)**	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.000)**
WTI_A	0.25	-0.003 (0.001)**	-0.003 (0.001)**	-0.002 (0.001)**	-0.003 (0.001)*	-0.003 (0.001)*
	0.50	-0.005 (0.001)*	-0.005 (0.001)*	-0.004 (0.001)*	-0.005 (0.001)*	-0.003 (0.001)*
	0.75	-0.007 (0.001)*	-0.008 (0.001)*	-0.007 (0.001)*	-0.008 (0.001)*	-0.005 (0.001)*
OS_A	0.25	0.002 (0.001)*	0.003 (0.001)*	0.002 (0.001)**	0.002 (0.001)*	0.001 (0.001)***
	0.50	0.002 (0.001)**	0.003 (0.001)*	0.002 (0.001)*	0.002 (0.001)*	0.002 (0.001)*
	0.75	0.003 (0.001)*	0.004 (0.001)*	0.003 (0.001)*	0.003 (0.001)*	0.004 (0.001)*
CSR_I	0.25	0.002 (0.001)*	0.003 (0.001)*	0.003 (0.001)*	0.003 (0.001)*	0.002 (0.001)*
	0.50	0.000 (0.001)	0.003 (0.001)*	0.003 (0.001)*	0.003 (0.001)*	0.000 (0.001)
	0.75	-0.001 (0.001)**	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)
CR	0.25		0.000 (0.000)		0.000 (0.000)*	0.000 (0.000)*
	0.50		0.000 (0.000)*		0.000 (0.000)*	0.000 (0.000)*
	0.75		0.000 (0.000)**		0.000 (0.000)*	0.000 (0.000)*
EFIHF	0.25			0.000 (0.000)*	0.000 (0.000)*	
	0.50			0.000 (0.000)*	0.000 (0.000)*	
	0.75			0.000 (0.000)*	0.000 (0.000)*	
GC_I	0.25					-0.005 (0.000)*

	0.50					-0.005 (0.000)*
	0.75					-0.006 (0.000)*
GDP	0.25	0.000 (0.000)				
	0.50	0.000 (0.000)				
	0.75	0.000 (0.000)				
FDLL	0.25	0.000 (0.000)*				
	0.50	0.000 (0.000)*				
	0.75	0.000 (0.000)*				
SMD	0.25	0.000 (0.000)*	0.000 (0.000)*			
	0.50	0.000 (0.000)*	0.000 (0.000)*			
	0.75	0.000 (0.000)*	0.000 (0.000)*			
Inflation	0.25		0.000 (0.000)*	0.000 (0.000)*	0.000 (0.000)*	
	0.50		0.001 (0.000)*	0.001 (0.000)*	0.000 (0.000)*	
	0.75		0.001 (0.000)*	0.001 (0.000)*	0.001 (0.000)*	
DD	0.25		0.000 (0.000)**			
	0.50		0.000 (0.000)			
	0.75		0.000 (0.000)			
C	0.25	-0.007 (0.003)*	-0.007 (0.003)**	-0.002 (0.003)	-0.001 (0.003)	0.006 (0.002)**
	0.50	-0.009 (0.002)*	-0.010 (0.003)*	-0.003 (0.003)	-0.002 (0.003)	0.008 (0.002)*
	0.75	-0.013 (0.003)*	-0.018 (0.004)*	-0.010 (0.004)**	-0.008 (0.003)**	0.008 (0.003)*

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. The table exhibits the significant values of each variable at different levels of quantiles, i.e., 25%, 50%, and 75%. Return on Assets (ROA) is used as the dependent variable. Five models are tested in the regression analysis. Model 7a depicts the joint impact of bank-specific factors, corporate governance, and environmental factors on ROA. Model 8a reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, and market structure with ROA. Model 9a indicates the combined impact of bank-specific factors, corporate governance factors, environmental factors, and economic freedom index with ROA. Model 10a reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and economic freedom index with ROA. Model 11a **shows** the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and the global competitiveness index with ROA. The control variables used in the analysis include Liquid liabilities to GDP(%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), and demand density.



Table-7 (h). Quantile Regression Process at 25%, 50% and 75% (Efficiency)

Model		7b	8b	9b	10b	11b
Variab les	Quan tile	BSF+CGF +CSR_I	BSF+CGF+C SR_I+CR	BSF+CGF+CSR _I+EFIHF	BSF+CGF+CSR_I +CR+EFIHF	BSF+CGF+CSR_I +CR+GC_I
BNPL	0.25	0.003 (0.001)*	0.001 (0.001)	0.002 (0.001)**	0.001 (0.001)	0.002 (0.001)
	0.50	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)
	0.75	0.000 (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
BDEP _A	0.25	-0.044 (0.076)	-0.118 (0.104)	-0.045 (0.097)	-0.056 (0.106)	-0.098 (0.104)
	0.50	-0.092 (0.079)	-0.079 (0.075)	-0.035 (0.079)	-0.036 (0.080)	-0.107 (0.079)
	0.75	-0.055 (0.047)	-0.069 (0.049)	-0.064 (0.050)	-0.069 (0.051)	-0.089 (0.049)***
BLOA N_A	0.25	0.158 (0.078)**	0.153 (0.076)**	0.239 (0.074)*	0.214 (0.076)*	0.137 (0.070)**
	0.50	0.184 (0.078)*	0.207 (0.072)*	0.214 (0.068)*	0.213 (0.070)*	0.160 (0.070)**
	0.75	0.204 (0.051)*	0.185 (0.057)*	0.177 (0.057)*	0.181 (0.064)*	0.133 (0.054)*
BCAR	0.25	0.001 (0.002)	-0.001 (0.003)	-0.001 (0.002)	0.000 (0.003)	0.000 (0.002)
	0.50	-0.002 (0.003)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
	0.75	-0.001 (0.0020)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)
BBS	0.25	-0.009 (0.006)	-0.006 (0.007)	-0.005 (0.006)	-0.005 (0.006)	-0.006 (0.008)
	0.50	-0.006 (0.007)	0.002 (0.006)	0.000 (0.005)	0.001 (0.005)	0.002 (0.007)
	0.75	-0.002 (0.005)	0.005 (0.004)	0.003 (0.004)	0.003 (0.004)	0.001 (0.005)
BODS	0.25	-0.001 (0.021)	-0.015 (0.021)	-0.012 (0.020)	-0.015 (0.021)	-0.009 (0.020)
	0.50	0.003 (0.022)	-0.016 (0.020)	-0.020 (0.019)	-0.021 (0.020)	-0.002 (0.020)
	0.75	-0.020 (0.018)	-0.027 (0.018)	-0.021 (0.018)	-0.021 (0.019)	-0.015 (0.017)
CEOD	0.25	-0.072 (0.021)*	-0.058 (0.021)*	-0.055 (0.021)*	-0.050 (0.020)**	-0.051 (0.020)***
	0.50	-0.059 (0.020)*	-0.054 (0.019)*	-0.060 (0.019)*	-0.060 (0.019)*	-0.055 (0.020)***
	0.75	-0.045 (0.012)*	-0.034 (0.013)*	-0.042 (0.012)*	-0.042 (0.012)*	-0.040 (0.013)***
CEOW	0.25	-0.016 (0.023)	-0.003 (0.025)	-0.017 (0.023)	-0.002 (0.024)	-0.003 (0.024)

WTI_A	0.50	-0.033 (0.030)	-0.017 (0.029)	-0.016 (0.030)	-0.016 (0.030)	-0.027 (0.030)
	0.75	0.007 (0.019)	0.008 (0.018)	-0.006 (0.020)	-0.006 (0.020)	-0.001 (0.020)
	0.25	0.070 (0.060)	0.113 (0.053)**	0.113 (0.050)**	0.130 (0.050)*	0.118 (0.050)**
OS_A	0.50	0.108 (0.053)**	0.097 (0.048)**	0.091 (0.051)***	0.091 (0.051)***	0.100 (0.048)**
	0.75	0.020 (0.035)	0.019 (0.035)	0.028 (0.036)	0.029 (0.036)	0.023 (0.035)
	0.25	-0.020 (0.038)	-0.031 (0.038)	-0.014 (0.036)	-0.018 (0.038)	-0.026 (0.038)
CSR_I	0.50	0.009 (0.042)	-0.004 (0.041)	-0.017 (0.039)	-0.018 (0.039)	-0.004 (0.040)
	0.75	0.037 (0.025)	0.018 (0.025)	0.006 (0.027)	0.007 (0.027)	0.019 (0.025)
	0.25	-0.070 (0.037)**	-0.062 (0.033)***	-0.067 (0.031)**	-0.071 (0.033)**	-0.071 (0.035)**
CR	0.50	-0.079 (0.039)**	-0.088 (0.033)*	-0.064 (0.032)**	-0.064 (0.032)**	-0.090* (0.036)
	0.75	-0.015 (0.029)	-0.023 (0.029)	-0.008 (0.026)	-0.010 (0.027)	-0.014 (0.028)
	0.25		-0.003 (0.001)*		-0.001 (0.001)	-0.002 (0.001)
EFIHF	0.50		-0.002 (0.001)***		0.000 (0.001)	-0.001 (0.001)
	0.75		-0.001 (0.001)**		0.000 (0.001)	-0.001 (0.001)
	0.25			-0.005 (0.002)*	-0.003 (0.002)	
GC_I	0.50			-0.004 (0.002)*	-0.004 (0.002)*	
	0.75			-0.001 (0.001)***	-0.001 (0.001)	
	0.25					0.013 (0.021)
GDP	0.50					0.001 (0.021)
	0.75					0.026 (0.019)
	0.25	0.014 (0.005)*				

	0.50	0.012 (0.005)**				
	0.75	0.009 (0.004)*				
FDLL	0.25	0.000 (0.000)				
	0.50	0.000 (0.000)				
	0.75	0.000 (0.000)*				
SMD	0.25	0.000 (0.000)	0.000 (0.000)			
	0.50	0.000 (0.000)	-0.001 (0.000)			
	0.75	0.000 (0.000)	0.000 (0.000)			
Inflation	0.25	-0.005 (0.005)	-0.007 (0.004)***	-0.008 (0.004)**		
	0.50	-0.009 (0.005)**	-0.011 (0.005)**	-0.011 (0.005)**		
	0.75	-0.007 (0.003)*	-0.007 (0.003)*	-0.007 (0.003)*		
DD		0.000 (0.000)				
		0.000 (0.000)*				
		0.000 (0.000)				
C	0.25	0.759 (0.146)*	1.044 (0.192)*	1.101 (0.173)*	1.095 (0.177)*	0.933 (0.160)*
	0.50	0.866 (0.143)*	1.016 (0.143)*	1.153 (0.151)*	1.153 (0.155)*	0.928 (0.132)*
	0.75	0.888 (0.102)*	1.006 (0.122)*	1.031 (0.124)*	1.036 (0.125)*	0.917 (0.095)*

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis shows standard error. The table exhibits the significant values of each variable at different levels of quantiles, i.e., 25%, 50%, and 75%. Efficiency (TE) is used as the dependent variable. Five models are tested in the regression analysis. Model 7b depicts the joint impact of bank-specific factors, corporate governance factors, and environmental factors on TE. Model 8b reveals the combined impact of bank-specific factors, corporate governance factors, environmental factors, and market structure with TE. Model 9b demonstrates the combined impact of bank-specific factors, corporate governance factors, environmental factors, and the economic freedom index with TE. Model 10b reports the combined impact of bank-specific factors, corporate governance factors, environmental factors, market

structure, and the economic freedom index with TE. Model 11b shows the joint impact of bank-specific factors, corporate governance factors, environmental factors, market structure, and the global competitiveness index with TE. The control variables used in the analysis include Liquid liabilities to GDP(%) (FDLL), stock market development (SMD), gross domestic product (GDP), Inflation (INF), and demand density.

### 4.3.3. Financial Reporting Quality as a Moderator

This section briefly discusses the moderating effect of financial reporting quality. The method applied to measure FRQ is earning management. This study followed loan loss models used by Hassan and Wall (2003) and Ujah et al. (2017). The researchers used earning management to moderator CG and bank performance (Kang and Kim, 2011; Latif et al., 2018). However, Sun et al. (2010), Rahmawati and Dianita (2011), Suteja et al. (2016), and Sial et al. (2018) used financial reporting quality as a moderator between CSR index and bank performance. This study addressed the two important questions regarding the role of financial reporting quality i.e.

- a) What is the moderating role of financial reporting quality between corporate governance and bank performance (ROA and TE)?
- b) How does the financial reporting quality moderates the relationship between the corporate social responsibility disclosure index and bank performance?

#### 4.3.3.1. Moderating Role of Financial Reporting Quality with respect to Return on Assets and Efficiency

Table-8 indicate a moderating impact of FRQ on corporate governance factors (CGF) and corporate social responsibility disclosure index (CSR\_I) with respect to ROA and Efficiency.

**Table-8. Moderating Impact of Financial Reporting quality (FRQ)**

	ROA_A (12a)	Eff/TE (12b)
Variable	Coefficient	Coefficient
ROA_A/TE(-1)	0.041 (0.038)	-0.165 (0.073)**
FRQMV	0.000 (0.000)*	0.000 (0.000)
BNPL	-0.001 (0.000)*	0.004 (0.001)*
BDEP_A	0.008 (0.004)**	-0.171 (0.105)
BLOAN_A	0.011 (0.004)**	0.097 (0.065)
BCAR	0.000 (0.000)*	-0.001 (0.002)
BBS	-0.002 (0.001)**	-0.051 (0.017)*
BODS	0.000 (0.001)	0.071 (0.028)**

CEOD	-0.001 (0.001)	0.003 (0.036)
CEOW	-0.002 (0.001)**	0.043 (0.017)**
WTI_A	-0.005 (0.002)**	0.089 (0.036)**
OS_A	-0.005 (0.002)*	-0.045 (0.042)
CSR_I	-0.004 (0.002)**	-0.028 (0.021)
CR	0.000 (0.000)	-0.002 (0.002)
EFIHF	0.000 (0.000)	0.000 (0.002)
INF	0.000 (0.000)**	-0.005 (0.003)
FRQMV*BODS	0.000 (0.000)***	0.000 (0.000)**
FRQMV*CEOD	0.000 (0.000)**	0.000 (0.000)
FRQMV*WTI_A	0.000 (0.000)*	0.000 (0.000)
FRQMV*CSR_I	0.000 (0.000)*	0.001 (0.000)*
C	0.032 (0.017)***	1.780 (0.277)*
R-sqr.	0.835	0.505
Adj. R-sqr	0.788	0.364
DW stat.	1.863	2.193
F-stat.	17.722	3.577
Prob(F-stat.)	0.000	0.000

Note: \*, \*\*, \*\*\* at 1%, 5%, 10% respectively. The figure in parenthesis reports the standard error. The dependent variables are return on Assets (ROA) and Efficiency (TE). Model 1 (a,b) depicts the moderating effect of financial reporting quality on independent and dependent variables. Loans Loss provision/reserves (LLR/LLP) are used as a proxy to measure earning management. The value of residual arises after the regression is used as a proxy to measure earning management. This study moderates the relationship of financial reporting quality with corporate governance and environmental factors. R-squared indicates how much variation in our model is due to the explanatory variable, i.e., 83.4% and 50.5%, respectively, regarding ROA\_A and TE. The p-value of the F-statistics is zero in all the models implies that the models are statistically fit and significant. Durbin-Watson is used to test the auto-correlation among the variables. Its value lies between 1.5 to 2.5 in all the models, implying no sign of auto-correlation among the predictors. The lagged value of dependent variables is significant in these models.

The empirical findings indicate that FRQ significantly and positively influences the bank's ROA. Moreover, it significantly and positively moderates the relationship between board size and ROA/TE. This implies that FRQ has a significant and positive impact on board size, ultimately improving the banks' performance. This is because the larger board members have versatile knowledge, skills, and experience, so they effectively monitor and manage the company's affairs, ultimately enhancing bank performance. This means that the better the financial reporting quality, the more strongly the relationship between board size and ROA. Hence, we conclude that a larger board decreases earning manipulation, improves financial reporting quality, and enhances the performance of the banking sector as said by Akeju and Babatunde (2017).

Similarly, FRQ significantly and positively moderates the relationship between CEO duality and ROA. According to stewardship theory, duality (the same person should be CEO and Chairman) makes managerial monitoring effective, ultimately leading to an increase in the company's performance. This implies that stakeholders are satisfied with the reporting quality of the banks. Thus, better financial reporting quality strengthens the positive relationship of CEO duality with ROA. Hence, we conclude that duality decreases earning manipulation, makes managerial monitoring effective and ultimately increases banks' ROA.

The study also found that FRQ significantly and positively influences the relationship between gender diversity and ROA. This implies that a more diverse board is lesser involved in earning manipulation; hence stakeholders enjoy more reliable information regarding financial reporting. The majority of the studies found that the significant participation of the female on the board is that they are lesser involved in earning manipulations and making decisions to enhance the bank's performance (Abbott, Parker & Presley, 2012; Owen & Temesvary, 2018). Hence, we conclude that financial reporting quality enhances the positive relationship between gender diversity and ROA. The scholars argue that corporate governance decreases the imbalance of information through better financial reporting quality.

The study found that FRQ significantly and positively moderates the relationship between CSR disclosure and ROA/TE. This implies that better financial reporting quality decreases the information gap between banks and various stakeholders. Thus, FRQ positively enhances the relationship of CSR disclosure and ROA/TE. The previous literature that

examines the moderating effect of FRQ in the context of CSR and bank performance includes Suteja, Gunardi, and Mirawati (2016) and Rahmawati and Dianita (2011).



#### 4.3.4. Comparison of the Results of Estimation Techniques Used in the Study

The study estimated the multiple regression models using static/dynamic panel (based on mean) and quantile regression (based on median). The coefficient estimated using quantile regression is more robust as it is less prone to extreme values in the dataset. It is effective when residuals are not normal in the dataset. There are a few variables, such as deposits, loans/advances, bank size, CEO duality, foreign ownership, corporate social responsibility disclosure (CSR\_I), which provide different results while applying the estimation techniques based on means (PET) and based on median (quantile regression) in Table-9 (a,b,c).

The results obtained through PET showed a significant and direct impact of bank size with ROA, whereas a significant and negative impact of bank size with ROA in the case of quantile regression. The deviation in the results may occur due to the outliers in the dataset as the descriptive statistics of mean and median bank size indicate the values of 16.849 and 16.968, respectively, while the maximum value in the dataset is 22.111. In the same pattern, the results of other variables are also convergent due to the outliers. Few instances are reported here, such as the descriptive statistics of the mean and median of the deposit are 0.736 and 0.760, respectively, while the maximum value in the dataset is 0.940, implying that there is a wide gap between the maximum values with means and median. Similarly, the descriptive statistics of the mean and median of loans are 0.591 and 0.619, respectively, while the maximum value in the dataset is 0.905, implying that variation in the results obtained through both techniques exists due to the outliers. The mean and median of CEO duality are 0.760 and 1.000, respectively, while the maximum value in the dataset is 1, implying that variation in the results exists due to the outliers. CEO duality finds a significant/positive impact on ROA in the case of quantile regression. It is matched with the findings of Conyon and He (2017), while profitability is positively and significantly influenced by CEO duality as in the case of PET and is matched with the results of Ahmadi et al. (2017); Bennouri et al. (2018); Noguera (2020). The mean and median of foreign ownership are 0.157 and 0.043, respectively. At the same time, the maximum value in the dataset is 1, exhibiting that outliers influence the variation in the results obtained through both techniques. The descriptive statistic for the mean and median of CSR\_I is 0.466 and 0.474, respectively, while the maximum value is 1, indicating that the variation in the results obtained through both techniques is due to the outliers.

**Table-9 (a). Comparison of the Results of Estimation Techniques Used in the Study (Step by Step Multiple Regression Model)**

Models	Techniques Used	ROA		Efficiency	
		PET	QR	Static PET	QR
1a/1b	ROA_A/ Efficiency (-1)	SIG/+VE	N/A	SIG/-VE	N/A
	BNPL	SIG/-VE	SIG/-VE	SIG/+VE	X
	BDEP	X	X	SIG/-VE	X
	BLOAN	SIG/+VE	X	X	SIG/+VE
	BCAR	SIG/+VE	SIG/+VE	X	X
	BBS	SIG/-VE	SIG/+VE	X	X
2a/2b	BODS	X	X	SIG/+VE	X
	CEOD	X	X	X	SIG/-VE
	CEOW	X	X	SIG/+VE	X
	WTI_A	SIG/-VE	X	X	X
	OS_A	SIG/-VE	SIG/+VE	X	X
3a/3b	CSR_i	SIG/-VE	SIG/+VE	X	SIG/-VE
4a/4b	CR	X	SIG/+VE	X	X
5a/5b	EFIHF	X	X	X	X
6a/6b	GC_I	SIG/-VE	SIG/-VE	X	X

Note: Above table compares the results of regression models and estimation techniques used in the study. PET and QR denote Panel Estimation Technique and Quantile regression, respectively. X indicates the insignificant impact of explanatory variables on the explained variable.

Table-9 (b). Comparison of the Results of Estimation Techniques Used in the Study (Step by Step Multiple Regression Model)

Models	Model 7-a				Model 8-a				Model 9a				Model 10a				Model 11a			
	PET	GMM	QR		PET	GMM	QR		PET	GMM	QR		PET	GMM	QR		PET	GMM	QR	
Techniques Used																				
ROA_A(-1)	X	SIG/+VE	N/A		X	X	N/A		X	SIG/+VE	N/A		X	SIG/+VE	N/A		X	SIG/+VE	N/A	
BNPL	SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE	
BDEP	SIG/+VE	SIG/+VE	X		SIG/+VE	X	X		SIG/+VE	SIG/+VE	SIG/-VE		SIG/+VE	SIG/+VE	X		SIG/+VE	SIG/+VE	X	
BLOAN	SIG/+VE	SIG/+VE	SIG/-VE		SIG/+VE	SIG/+VE	SIG/-VE		SIG/+VE	SIG/+VE	X		SIG/+VE	X	X		SIG/+VE	SIG/+VE	X	
BCAR	SIG/+VE	SIG/+VE	SIG/+VE		SIG/+VE	SIG/+VE	SIG/+VE		SIG/+VE	SIG/+VE	SIG/+VE		SIG/+VE	SIG/+VE	SIG/+VE		SIG/+VE	SIG/+VE	SIG/+VE	
BBS	X	X	SIG/+VE		X	SIG/-VE	SIG/+VE		X	X	SIG/+VE		X	SIG/-VE	SIG/+VE		X	X	SIG/+VE	
BODS	X	X	SIG/+VE		X	X	SIG/+VE		X	X	X		X	X	SIG/+VE		X	X	X	
CEOD	SIG/-VE	X	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE		SIG/-VE	X	SIG/+VE		SIG/-VE	X	SIG/+VE		X	X	X	
CEOW	SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	X		SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	SIG/-VE	SIG/-VE	
WTI_A	SIG/-VE	SIG/-VE	SIG/-VE		SIG/-VE	X	SIG/-VE		SIG/-VE	X	SIG/-VE		SIG/-VE	X	SIG/-VE		SIG/-VE	X	SIG/-VE	
OS_A	SIG/-VE	X	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE		SIG/-VE	X	SIG/+VE		SIG/-VE	X	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE	
CSR_i	SIG/-VE	SIG/-VE	X		SIG/-VE	SIG/-VE	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE		SIG/-VE	SIG/-VE	SIG/+VE	
CR	N/A	N/A	N/A		SIG/+VE	X	SIG/+VE		N/A	N/A	N/A		SIG/+VE	X	SIG/+VE		SIG/+VE	SIG/+VE	SIG/+VE	
EFHF	N/A	N/A	N/A		N/A	N/A	N/A		X	X	SIG/+VE		X	N/A	SIG/+VE		N/A	N/A	N/A	
GC_I	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A		N/A	X	N/A		X	X	SIG/-VE	

Note: Above table compares the results of regression models and estimation techniques used in the study. PET, GMM, and QR denote panel estimation techniques, generalized method of moments, and quantile regression methods. X indicates the insignificant impact of explanatory variables on ROA.

Table-9 (c) Comparison the Results of Estimation Techniques Used in the Study (Step by Step Multiple Regression Model)

Models Techniques Used	Model 7b			Model 8b			Model 9b			Model 10b			Model 11b		
	PET	GMM	QR	PET	GMM	QR	PET	GMM	QR	PET	GMM	QR	PET	GMM	QR
EN(-1)	SIG/+VE	SIG/-VE	N/A	SIG/+VE	X	N/A	SIG/-VE	X	N/A	SIG/-VE	X	N/A	SIG/-VE	SIG/-VE	N/A
BNPL	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X
BDEP	SIG/+VE	SIG/-VE	X	SIG/+VE	SIG/-VE	X	SIG/-VE	SIG/-VE	X	SIG/-VE	X	X	SIG/-VE	X	X
BLOAN	X	SIG/+VE	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	X	X	SIG/+VE	X	SIG/+VE	SIG/+VE
BCAR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BBS	SIG/-VE	X	X	X	SIG/-VE	X	X	SIG/-VE	X	SIG/-VE	SIG/-VE	X	X	X	X
BODS	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X
CEOD	X	X	SIG/-VE	X	X	SIG/-VE	X	X	SIG/-VE	X	X	SIG/-VE	X	X	SIG/-VE
CEOW	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X	SIG/+VE	SIG/+VE	X
WTL_A	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE	SIG/+VE
OS_A	X	SIG/-VE	X	X	X	X	X	X	X	X	X	X	X	SIG/-VE	X
CSR_I	X	X	SIG/-VE	X	X	SIG/-VE	X	SIG/-VE	SIG/-VE	X	X	SIG/-VE	X	X	SIG/-VE
CR	N/A	N/A	N/A	X	X	SIG/-VE	N/A	N/A	N/A	X	X	X	X	X	X
EFIHF	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	SIG/-VE	X	X	SIG/-VE	N/A	N/A	N/A
GC_I	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	SIG/-VE	X

Note: Above table compares the results of regression models and estimation techniques used in the study. PET, GMM, and QR denote panel estimation techniques, generalized method of moments, and quantile regression methods. X indicates the insignificant impact of explanatory variables on Efficiency.

## CHAPTER 05

### 5. Conclusion

This chapter summarises the results obtained by applying various techniques such as static panel estimation, quantile regression, and dynamic panel estimation techniques. Later on, it throws light on the study's implications in section 5.2, whereas the potential contribution of the study and future recommendations are discussed in sections 5.3 and section 5.4 respectively.

#### 5.1. Summary and Conclusion

The main essence of this study is to investigate the influence of bank-specific factors, corporate governance factors, concentration, institutional and environmental factors by taking data from the 175 commercial banks from the ten countries of the Asia-Pacific region for the period from 2013 to 2018 besides investigating the moderating effect of financial reporting quality. This study used return on assets as a profitability measure and data envelopment analysis for bank efficiency. This study used static panel estimation techniques such as common effect, fixed effect, and random effect, and dynamic panel estimation techniques such as GMM estimation and Quantile regression.

The results of static panel estimation techniques indicate that non-performing loans, loans, the board size, CEO Women, percentage of women on board shed a significant and positive impact on efficiency, whereas deposits and bank size are found to have a significant and negative relationship with efficiency. Furthermore, deposits, loans, capitalization, and concentration ratios have a significant and positive impact on profitability. In contrast, non-performing loans, CEO duality, CEO Women, percentage of women on board, ownership structure, and CSR disclosure have a significant and negative impact on ROA.

The results of GMM estimation techniques demonstrate a significant and positive impact of non-performing loans, loans, the board size, CEO Women, percentage of women on board on efficiency, whereas, deposits, bank size, ownership structure, CSR disclosure, and global competitiveness index shed a significant and negative impact on efficiency. Moreover, the variables such as deposit, loans, capital ratio, and concentration ratio influence significantly and positively influence the profitability, whereas NPLs, size of banks, CEO

duality, CEO Women, percentage of women on board, ownership structure, CSR show a significant and negative impact on ROA.

The results of Quantile regression exhibit that loans and the percentage of women on board have a significant and positive impact on efficiency. In contrast, CEO duality, CSR, concentration ratio, and economic freedom index have a significant and negative impact on TE. Furthermore, the variables such as capital ratio, bank size, the board size, CEO duality, ownership structure, CSR, concentration ratio, and economic freedom index depict a significant and positive impact on profitability. In contrast, non-performing loans, deposits, loans, CEO women, percentage of women on board, and the global competitiveness index have a significant and negative impact on ROA.

## **5.2. Implication of the Study**

The results obtained from the study imply that CAELs (asset quality, liquidity, capitalization, bank size), corporate governance, competition, institutional and environmental factors affect the health of financial intermediaries due to imperfect information, agency problems (unaligned goals), conflict of interests, weak regulatory and supervisory frameworks/policies, etc. As a result, the managers can benefit from imperfect information to /her benefits by manipulate the reporting disclosures (via loan loss provision/reserves) by presenting the accounts as more lucrative/attractive to the various stakeholders. Thus, the stakeholders can make their decision on distorted information. The issue can be resolved by decreasing the information gap among the various stakeholders, thereby developing a better information system, strong institutional and regulatory frameworks/policies, and effective corporate governance. The study has greater implications for various stakeholders as it helps understand how the banks manipulate the financial statements to avoid paying taxes to governments. Similarly, the study helps the banks frame policies regarding asset-financing structure, concentration strategies, governance, regulatory, institutional, political, and environmental factors affecting bank performance and formulate/make their policies/decisions accordingly.

## **5.3. Potential Contribution of the Study**

The findings of the study are of great importance to all stakeholders as they will gain both theoretical and practical experience on how these factors influence the performance of

the banking sector. The proposed model contributes to the existing literature in different ways;

### **5.3.1. Theoretical Contribution**

- (a) This study contributes to information asymmetry theory by exploring how imbalanced information affects the various factors influencing the bank's performance and various stakeholders. The theory generates two issues such as moral hazard and adverse selection. Both the problems can be overcome by developing a better information system and sharing more disclosures to lessen the gap between banks and various stakeholders.
- (b) This study contributes to financial intermediation theory by explaining how an imbalance of information, transaction cost, and regulation affects financial intermediaries' health, their capacity for providing loans/credit, and techniques to recover bad debts. The imperfect information induces banks to use earning management to resolve the issue of illiquidity, credit risk, capital inadequacy, and agency problems. Thus, it helps the monetary authorities to frame strong regulatory and supervisory frameworks regarding liquidity, capitalization, and asset quality to protect the interest of various stakeholders.
- (c) This study contributes to governance theories by addressing how imperfect information and agency problems (unaligned goals), monitoring and duality issues (creating a conflict of interest, diminishing and reducing board independence and flexibility) explain the relationship between dimensions of governance and banks performance. The theory states that the managers may manipulate the financial reporting if the interests of the manager and shareholders (owner) are unaligned. Managers can use the imperfect information in their favour instead of protecting the company's interests. As a result, it leads to a decline in bank performance. However, stewardship theory postulates that the interests of the manager and shareholders are aligned due to less information gap between stakeholders. It can reduce agency costs, lead to the non-manipulation of financial statements, and amplify the firm's performance (Kiel & Nicholson, 2003; Richardson, 2000).
- (d) Theoretically, this study contributes to gender diversity theories (tokenism and critical mass theory) by instigating the role of women on the corporate board as a

showpiece (tokens) or key influencers and how they improve organizational performance.

- (e) Theoretically, this study contributes by exploring whether market power theories or efficiency theories explain the performance of the banking sector. Therefore, this study tests the validity of market structure theories and efficiency theories in the Asia-Pacific region.
- (f) This study tests the validity of agency and stakeholder theory by investigating how CSR disclosure affects the bank performance and various stakeholders. Agency theory posits that the managers of banks manipulate the earnings under the umbrella of CSR disclosure to protect their interests. Firms use CSR to manipulate earnings management or window dressing to present the accounts as more lucrative to investors, communities and avoid paying heavy taxes to governments. This is consistent with agency theory. It helps management make decisions regarding the extent to which they should disclose CSR activities, along with the extent to which the benefits of disclosure are more than the risks of increased intervention from political clout. It also helps the management find ways to facilitate various stakeholders and maintain its reputation in the market. Contrary to this, stakeholder theory posits that banks protect various stakeholders' interests, hence positively influencing the performance.

### **5.3.2. Practical Contribution**

#### **5.3.2.1. Regulators such as Government and Central Bank**

It helps the regulators to understand upto what extent the banks indulge in manipulating the financial statements to avoid paying taxes to governments, adhere to national/regulatory laws and regulations, and formulate policies that promote green financing and responsible lending to develop an environment-friendly society.

#### **5.3.2.2. Management**

It helps the management understand the demographic dynamics, policies regarding asset-financing structure, capitalization levels, borrower's selection, concentration/competitor strategies, governance, regulatory/institutional policies, reporting manipulations, disclosure protocols, etc., affecting bank performance and then formulate their policies accordingly.



### **5.3.2.3. Communities, Environment, and Societies**

- a) Shareholders' main objective is twofold (i) their money is not wasted (ii) dividend on the invested amount. This study helps the shareholders to determine how managers use their money in the affairs of the business and upto what extent they use loan loss provision as a tool to manipulate financial statements or window dressing to present the accounts as more lucrative to investors.
- b) This study helps the depositors know about the health of financial institutions so that they can decide whether to retain the money in the same bank or shift it somewhere else in another bank. It further helps the depositors understand which banks offer a higher return on their deposits, maintain privacy, security/dispute resolution, product information, affordability, and convenience.
- c) This study helps the borrowers or creditors understand how much loan is offered by banks and at what interest rate? And in how many years do they return the money to the banks?
- d) It helps the credit rating agencies to rate the banks by examining the financial statements.
- e) This study is also a valuable source for communities to understand upto what extent the banks are involved in social investment (food, education, health, and shelter), poverty reduction, sustainable green financing, charities, etc.
- f) CSR disclosure helps the employees understand which bank offers what type of benefits related to the job, such as career development policy, training policy, health, and safety policy, diversity and equal employment opportunity, fair compensation, etc.

### **5.3.2.4. Researchers/Academicians**

- a) It helps the scholars to comprehend how these factors affect the performance and replicate the same study in the context of other countries.

### **5.3.3. Contextual Contribution**

Generally, the countries are differentiated from others concerning the following characteristics such as population, population and demand density, political and economic structure, institutional and regulatory frameworks, voice and accountability, judicial effectiveness, technological readiness, business sophistication and innovation, macro-economic conditions (GDP growth rate, per capita income, inflation, unemployment,

spending on debt services), financial and stock market development, education and health sector, industry and agriculture-based economies, corruption levels, tax burden, government spending, fiscal health, market openness such as trade and investment freedom, financial freedom, etc. Hence, this study contributes contextually by assessing the effect of multiple factors on the performance in different study settings to assess each factor's relevance.

#### **5.4. Limitations and Future Recommendations**

The study evaluated the bank performance of the whole region instead of focusing on individual country analysis. The study has certain limitations and recommends that future researchers;

- (i) Do similar research by increasing the number of countries and number of years.
- (ii) By exploring other features of corporate governance (Audit Committee, Risk Management Committee, shariah supervisory board, Frequency of the meeting, number of the committees, etc.,) to evaluate the bank performance
- (iii) Consider pandemic crisis, digitalization, and banking sector performance
- (iv) Consider demographics and institutional factors such as population and demand density, worldwide governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, law and order, control of corruption)
- (v) Take regulatory factors such as the Basel accord or regulations imposed by central banks (reserve requirements, margin requirements, cash reserve ratio, open market operations, etc.)
- (vi) Considering how regulatory, legal, political, social, Hofstede cultural dimensions, technological, and financial development affect bank performance?
- (vii) Apply parametric approaches such as stochastic frontier analysis, non-parametric approaches such as Malmquist Productivity Index, market performance such as Tobin Q, economic performance such as Economic Value added, etc.
- (viii) Do research by examining the role of sustainable finance in bank performance.
- (ix) How does the banking sector lending meet the United Nations Sustainable development goals?

- (x) Do comparative studies of the national policies of countries and international organizations regarding corporate governance, sustainable finance, Basel Accord implementation, anti-money laundering, etc.
- (xi) Examine the moderating impact of other factors such as corporate governance, institutional, political, etc.
- (xii) Do similar research by applying other techniques such as smart partial least squares, etc.

## References

- Abbas, M., Azid, T. and Besar, M.H.A. (2016). Efficiency, effectiveness, and performance profile of Islamic and conventional banks in Pakistan. *Humanomics*, 32(1), pp.2-18.
- Abbas, A. (2018). Earning management in the banking industry and its impact on the firm value. *AKRUAL: Jurnal Akuntansi*, 10 (1), pp. 69-84.
- Abbadi, S. S., Hijazi, Q. F., and Al-Rahahleh, A. S. (2016). Corporate governance quality and earnings management: Evidence from Jordan. *Australasian Accounting, Business and Finance Journal*, 10(2), pp. 54-75.
- Abbott, L.J., Parker, S. and Presley, T.J. (2012). Female board presence and the likelihood of financial restatement. *Accounting Horizons*, 26 (4), pp. 607–629.
- Abdullah, A.B. and Azhar, A.R. (2015). Bank performance and board of directors attribute to Islamic banks. *International Journal of Islamic and Middle Eastern Finance and Management*, 8 (3), pp.291-309.
- Abdul-Rahman, R. and Haniffa, R.M. (2005). The effect of role duality on corporate performance in Malaysia. *Corporate Ownership and Control*, 2(2), pp. 40-47.
- Abdul-Hamid, Abdul-Wahab and Haron, R. (2017). Efficiency of Qatari banking industry: an empirical investigation. *International Journal of Bank Marketing*, 35 (2), pp. 298-318.
- Abduh, M. and Idrees, Y. (2013). Determinants of Islamic Banking Profitability in Malaysia.
- Ab-Hamid, M.F., Asid, R., Sulaiman, N.F.C., Sulaiman, W.F.W. and Abdul Bahri, E.N. (2018). The Effect of Earnings Management on Bank Efficiency. *Asian Journal of Accounting and Governance*, 10.

- Adnan, M.A., Htay, S.N., Ab. Rashid, H.M. and Meera, A.K. (2011). A panel data analysis on the relationship between corporate governance and bank efficiency. *Journal of Accounting, Finance and Economics*, 1 (1), pp. 1-15.
- Adeabah, D., Gyeke-Dako, A., and Andoh, C. (2018). Board gender diversity, corporate governance and bank efficiency in Ghana: a two stage data envelope analysis (DEA) approach. *Corporate Governance: The International Journal of Business in Society*, 19(2), pp. 299-320.
- Agustin, H., Indrastuti, S., Tanjung, A.R. and Said, M. (2018). Ownership structure and bank performance. *Banks and Bank Systems*, 13(1), pp. 80-87.
- Ajanthan, A., Balaputhiran, S. and Nimalathashan, B. (2013). Corporate governance and banking performance: a comparative study between private and state banking sector in Sri Lanka. *European Journal of Business and Management*, 5 (20).
- Ajili, H. and Bouri, A. (2018). Corporate governance quality of Islamic banks: measurement and effect on financial performance. *International Journal of Islamic and Middle Eastern Finance and Management*, 11 (3), pp. 470-487.
- Ahmed, J. and Bashir, M.F. (2016). An empirical investigation of banking sector development and economic growth in a panel of selected SAARC countries. *Theoretical and Applied Economics*, 2(607), pp. 65-72.
- Ahmadi, A., Nakaa, N. and Bouri, A. (2017). Chief executive officer attributes, board structures, gender diversity and firm performance among French CAC 40 listed firms. *Research in International Business and Finance*, 44, pp. 218-226.
- Akeju, J.B. and Babatunde, A.A. (2017). Corporate Governance and Financial Reporting Quality in Nigeria. *International Journal of Information Research and Review*, 4(2), pp. 3749-3753.

- Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), pp. 488–500.
- Akhtar, M.F., Ali, K. and Sadaqat, S. (2011). Factors Influencing the Profitability of Conventional Banks of Pakistan. *International Research Journal of Finance and Economics*, 66.
- Akmal, M. and Saleem, M. (2008). Technical Efficiency of the Banking Sector in Pakistan. *SBP Research Bulletin*, 4(1).
- Aldamen, H., Duncan, K., and Martinov-Bennie, N. (2016). Does good corporate governance enhance accruals quality during financial crises? *Managerial Auditing Journal*, 31(4/5).
- Ali, A., Wahla, K.R., Rasheed, A., and Ibrahim, M. (2020). Corporate Governance, Bank Performance and Value-Evidence from Pakistan. *NICE Research Journal*, 13 (3), 102-129.
- Alipour, M., Ghanbari, M., Jamshidinavid, B. and Taherabadi, A. (2019). Does board independence moderate the relationship between environmental disclosure quality and performance? Evidence from static and dynamic panel data. *Corporate Governance: The International Journal of Business in Society*, 19 (3), pp. 580-610.
- Atmeh, M., Shaban, M. and Alsharairi, M. (2020). Corporate Social Responsibility: Motives and Financial Performance. *International Journal of Financial Studies*, 8 (76).
- Andries, A.M., Capraru, B. and Nistor, S. (2018). Corporate governance and efficiency in banking: evidence from emerging economies. *Applied Economics*, 50 (34-35), pp. 3812-3832.
- Alareeni, B.A. and Hamdan, A. (2020). ESG impact on performance of US S & P 500-listed firms. *Corporate Governance: International Journal of Business and Society*, 20(7), pp. 1409-1428.

- Alhadab, M.M. and Al-Own, B. (2017). Earning Management and Banks performance: evidence from Europe. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 7 (4), pp.134-145.
- Alharthi, M. (2016). The Determinants of Efficiency, Profitability and Stability in the Banking Sector: A Comparative Study of Islamic, Conventional and Socially Responsible Banks
- Alqahtani, F., Mayes, D.G. and Brown, K. (2017). Islamic bank efficiency compared to conventional banks during the global crisis in the GCC region. *Journal of International Financial Markets, Institutions & Money*, 51, pp.58-74.
- Andries, A. M. (2009). Theories regarding financial intermediation and financial intermediaries: A Survey. *The USV Annals of Economics and Public Administration*, 9(2), pp. 254-261.
- Andries, A.M., Capraru, B., and Nistor, S. (2018). Corporate governance and efficiency in banking: evidence from emerging economies. *Applied Economics*
- Andersson, P. and Wallgren, F.M. (2018). Board Gender diversity and firm financial performance: a study of 100 companies listed on Nasdaq Stockholm.
- Ani, W.U., Ugwunta, D.O., Ezeudu, I.J., and Ugwuanyi, G.O. (2012). An empirical assessment of the determinants of bank profitability in Nigeria: Bank characteristics panel evidence. *Journal of Accounting and Taxation*, 4 (3), pp. 38-43.
- Anil, K. S., Dipasha, S., and Mukesh, K. B. (2012). Efficiency and productivity of Indian banks: an application of data envelopment analysis and Tobit regression. *National Conference on Emerging Challenges for Sustainable Business*
- Ardianty, F.D. and Viverita (2011). Market Power, Efficiency and Performance of Indonesian Banks. *SSRN Electronic Journal*

- Arnaboldi, F., Casu, B., Kalotychou, E., and Sarkisyan, A. (2018). The performance effects of board heterogeneity: what works for EU banks? *The European Journal of Finance*
- Arouri, H., Hossain, M. and Muttakin, M. B. (2011). Ownership Structure, Corporate Governance and Bank Performance: Evidence from GCC Countries. *Corporate Ownership and Control*, 8 (4).
- Arias, J., Maquieira, C. and Jara, M. (2019). Do legal and institutional environments matter for banking system performance? *Economic Research-Ekonomska Istraživanja*.
- Arora, A. and Sharma, C. (2016). Corporate governance and firm performance in developing countries: evidence from India. *Corporate Governance*, 16 (2), pp. 420 – 436.
- Arun, T., Almahrog, Y. and Aribi, Z. (2015). Female Directors and Earnings Management: Evidence from UK companies. *International Review of Financial Analysis*, 39, pp. 137–146.
- Aruoriwos, M. C-M., Chijoke, O.M., Simisola, A. and Paschal, O. (2020). The role of corporate governance on CSR disclosure and firm performance in a voluntary environment. *Corporate Governance*, 20 (2), pp. 294-306.
- Ashraf, M., Khan, B. and Tariq, R. (2017). Corporate Social Responsibility Impact on Financial Performance of Bank's: Evidence from Asian Countries. *International Journal of Academic Research in Business and Social Sciences*, 7(4).
- Asma, A.A. and Hadeel, Y. (2017). Bank Efficiency and Economic Freedom: Case of Jordanian Banking System. *European Journal of Scientific Research*, 146 (4), pp.444-454.
- Aslam, E. and Haron, R. (2021). Corporate Governance and banking performance: the mediating role of intellectual capital among OIC countries. *Corporate Governance*, 21(1), 111-136.



- Aslam, E., Haron, R. and Ahmad, S. (2019). A comparative analysis of the performance of Islamic and conventional banks: does corporate governance matter? *International Journal of Business Excellence*, 19 (2).
- Asteriou, D., Pilbeam, K., Tomuleasa, I. (2016). The Impact of Economic Freedom, Business Regulation and Corruption on Bank Profitability and Bank Stability: Evidence from Europe. *City Research Online*.
- Asteriou, D., Pilbeam, K., and Tomuleasa, I. (2021). The Impact of corruption, economic freedom, regulation and transparency on bank profitability and bank stability: Evidence from the Eurozone area, *Journal of Economic Behaviour and Organization*, 184, pp. 150-177
- Athanasoglou, P., Delis, M. and Staikouras, C. (2006). Determinants of bank profitability in the Southern Eastern European Region. *Working Paper No. 47, Bank of Greece, Athens*.
- Athanasoglou, P., and Brissimis, S.N., and Delis, M.D (2008). Bank-specific, Industry-specific and Macroeconomic Determinants of Bank Profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), pp. 121–136.
- Ayanda, A.M., Christopher, I. and Mudashiru, M.A. (2013). Determinants Of Banks' Profitability In A Developing Economy: Evidence From Nigerian Banking Industry. *Interdisciplinary Journal of contemporary research in business*, 4(9).
- Avramidis, P., Cabolis, C. and Serfes, K. (2018). Bank Size and market value; the role of direct monitoring and delegation costs. *Journal of Banking and Finance*, 93, pp. 127-138.
- Aziz, O.G. and Knutsen, J. (2019). The Banks Profitability and Economic Freedom Quality: Empirical Evidence from Arab Economies. *Journal of Banking and Financial Economics*, 1(11), pp. 96–110

- Bain, J. (1956). *Barriers to New Competition*. Harvard University Press, Cambridge, MA.
- Balasubramaniam, C. S. (2013). Non-Performing Assets and Profitability of Commercial Banks In India: Assessment and Emerging Issues. *Journal Of Research In Commerce and Management*, 1(7), pp. 2277-1166.
- Belhaj, S. and Mateus, C. (2016). Corporate Governance Impact on bank performance Evidence from Europe. *Corporate Ownership and Control*, 13(4).
- Banker, R., Chang, H. and Lee, S.Y. (2010). Differential impact of Korean banking system reforms on bank productivity. *Journal of Banking and Finance*, 34 (7), pp.1450-1460.
- Banker, R. D., Charnes, A., and Cooper, W. W.(1984). Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis. *Management Science*, 30 (9), pp. 1078-1092.
- Bankscope.(2017). Available from Bureau van Dijk databases.Retrieved from <https://www.bvdinfo.com/en-apac/our-products/company-information/international-products/orbis-banks>.
- Banerji, A., Mahatani, S., Sealy, R. and Vinnicombe, S. (2010). Standard Chartered Bank: women on corporate boards in India.
- Barth, J.R., Lin, C., Ma, Y., Seade, J., Frank, M. and Song, F.M. (2013). Do bank regulation, supervision and monitoring enhance or impede bank efficiency? *Journal of Banking and Finance*, 37, pp. 2879-2892.
- Barry, T.A., Dacanay, S.J.O., Lepetit, L. and Tarazi, A. (2008). Ownership Structure and Bank Efficiency in the Asia Pacific region

- Batir, T.E., Volkman, D.A. and Gungor, B. (2017). Determinants of bank efficiency in Turkey: participation banks versus conventional banks. *Borsa Istanbul Review*, 17(2),pp. 86-96.
- Beate, E. and Gro, L. (2010). Women on corporate boards: key influencers or tokens? *Journal of Managerial governance*.
- Beach, W.W. and Kane, T. (2018). *Methodology: Measuring the 10 Economic Freedoms*. Index of Economic Freedom.
- Beck, T., Demirgüç-Kunt, A. and Levine, R. (2000). A new database on the structure and development of the financial sector. *The World Bank Economic Review*, 14 (3), pp. 597-605.
- Belasri, S., Gomes, M. and Pijourlet, G. (2019). Corporate social responsibility and bank efficiency. *Journal of Multinational Financial Management*
- Benston, G. W. and Smith, C.W. (1976). A transaction cost approach to the theory of financial intermediation. *The Journal of Finance*, 31(1), pp. 215-231.
- Bennouri, M., Chtioui, T., Nagati, H. and Nekhili, M. (2018). Female board directorship and firm performance: what really matters? *Journal of Banking and Finance*, 88, pp. 267-291.
- Berger, A. N., DeYoung, R., Genay, H. and Udell, G. F. (2000). Globalization of financial institutions: evidence from Cross Border banking performance. *Brookings-Wharton Papers on Financial Services*, 3, pp. 23-158.
- Berger, A.N., Hasan, I. and Zhou, M. (2009). Bank ownership and efficiency in China: what will happen in the world's largest nation? *Journal of Banking and Finance*, 33 (1), pp. 113-130.

- Berger, A.N. and Humphrey, D.B. (1997). Efficiency of financial institutions: international survey and direction for future research. *European Journal of Operational Research*, 98 (2), pp.175-212.
- Berger, A.N. and Hannan, T.H. (1998). The efficiency cost of market power in the banking industry: a test of the 'quiet life' and related hypotheses. *Review of Economics and Statistics*, 80 (3), pp. 454-465.
- Berger, A.N. and DeYoung, R. (1997). Problem Loans and Cost Efficiency in Commercial Banks. *Journal of Banking and Finance*, 21(6), pp. 849–870.
- Berger, A.N. (1995). The Profit-Structure Relationship in Banking—Tests of Market-Power and Efficient-Structure Hypotheses. *Journal of Money, Credit and Banking*, 27, pp. 404–31.
- Berger, A.N. (1995). Relationship between Capital and Earnings in Banking. *Journal of Money, Credit and Banking*, 27, pp. 432 - 456.
- Bitar, Pukthuanthong and Walker (2018). The effect of capital ratios on the risk, efficiency and profitability of banks: evidence from OECD countries. *Journal of International Financial Markets, Institutions and Money*, 53, pp. 227-262.
- Bolton, B. (2020). Internal vs. External Corporate Social Responsibility at U.S. Banks, *Internatinal Journal of Financial Studies*, 8, 65
- Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking and Finance*, 13(1), pp. 65–79.
- Bradbury, M., Mak, Y. T. and Tan, S. M. (2006). Board characteristics, audit committee characteristics and abnormal accruals. *Pacific accounting review*, 18(2), pp. 47-68.

- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30 (1), pp.98-115.
- Buallay, A., Kukreja, G., Aldhaen, E., Mubarak, M.A. and Hamdan, A.M. (2019). Corporate Social Responsibility disclosure and firms performance in Mediterranean countries: a stakeholders perspective
- Carroll, A. B. (1979). A Three-dimensional Conceptual Model of Corporate Performance. *Academic Management Review*, 4(4), pp. 497-505
- Casu, B. and Molyneux, P. (2003). A comparative study of efficiency in European banking. *Applied Economics*, 35 (17), pp. 1865-1876.
- Calton, J. and Payne, S. (2003). Coping with paradox. *Business and Society*, 42, pp. 7–42.
- Ceccobelli, G. and Giosi, A. (2019). Earnings Management Practices In The Banking Industry: The Role Of Bank Regulation And Supervision. *Corporate Governance: Search for the Advanced Practices*
- Chan, S.G. and Karim, M.Z.A. (2016). Financial market regulation, country governance, and bank efficiency: Evidence from East Asian countries. *Contemporary Economics*, 10 (1), pp. 39-54.
- Chan, S.G. and Karim, M.Z.A. (2010). Bank efficiency and macro-economic factors: the case of developing countries. *Global Economic Review*, 39 (3), pp. 269-289.
- Chan, S.G. and Heang, L.T. (2010). Corporate Governance, Board Diversity and Bank Efficiency: The Case of Commercial Banks in Malaysia. *The Asian Business and Management Conference*.
- Chan, S., Koh, Y. H., Zainir, F. (2015). Market structure, institutional framework and bank efficiency in ASEAN 5. *Journal of Economics and Business*, 82, pp. 84–112.

- Chantapong, S. (2005). Comparative study of domestic and foreign bank performance in Thailand: the regression analysis. *Economic Change and Restructuring*, 38(1), pp. 63-83.
- Charumathi, B. and Ramesh, L. (2017). "Do social and environmental disclosures increase firm value? Evidence from Indian companies", *Indian Journal of Finance*, 11(4), pp. 23-38.
- Chen, C. (2009). Bank efficiency in Sub-Saharan African Middle-Income Countries. *Working Paper No. 09/14, International Monetary Fund*.
- Chimkono, E.E. (2016\_1). Effect of Micro and Macro-Economic Factors on Financial Performance of Commercial Banks in Malawi
- Chijoke-Mgbame, A.M., Oscar-Mgbame, C.O., Akintoye, S. and Ohalehi, P. (2019). The role of corporate governance on CSR disclosure and firm performance in a voluntary environment. *Corporate Governance: The International Journal of Business in Society*, 20 (2), pp. 294-306.
- Chortareas, G.E., Girardone, C. and Ventouri, A. (2013). Financial freedom and bank efficiency: evidence from the European union. *Journal of Banking and Finance*, 37 (4), pp. 1223-1231.
- Charnes, A., Cooper, W.W. and Rhodes, E. (1978). Measuring the efficiency of decision-making units. *European Journal of Operational Research*, 2, pp. 429-444.
- Claus, I. and Grimes, A. (2003). Asymmetric Information, Financial Intermediation and The Monetary Transmission Mechanism: A Critical Review. *Working Paper 03/19*.
- Coakes, S.J. and Steed, G.L. (2001). *SPSS Analysis without Anguish*, Wiley, Sydney.
- Cohen, A. (2003). Financial reporting quality choice: Determinants and consequences.

- Conyon, M.J. and He, L. (2017). Firm performance and boardroom gender diversity: A quantile regression approach. *Journal of Business Research*, 79, pp. 198-211.
- Coelli, T. J. (1996). A Guide to DEAP Version 2.1: A Data Envelopment Analysis (Computer) Program. *Centre for Efficiency and Productivity Analysis (CEPA) Working Papers*.
- Curcio, D., and Hasan, I. (2015). Earnings and capital management and signaling: The use of loan-loss provisions by European banks. *The European Journal of Finance*, 21(1), pp. 26-50.
- Davydenko, A. (2010). Determinants of Bank Profitability in Ukraine. *Undergraduate Economic Review*, 7(1).
- De Andres, P. and Vallelado, E. (2008). Corporate governance in banking: The role of the board of directors. *Journal of Banking and Finance*, 32, pp. 2570–2580.
- Dechow PM, Sloan RG, Sweeney AP (1995). Detecting earnings management. *Accounting Review*, 70 (2), pp. 193–225.
- Dechow, P.M., Sloan, R.G. and Sweeney, A.P. (1996). Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. *Contemporary Accounting Research*, 13 (1), pp. 1–36.
- Deegan, C. (2002). Introduction: The legitimising effect of social and environmental disclosures – a theoretical foundation, *Accounting, Auditing & Accountability Journal*, 15(3), pp. 282-311.
- Demsetz, H. (1973). Industry structure, market rivalry and public policy. *Journal of Law and Economics*, 16 (1), pp. 1-9.

- Detthamrong, U., Chancharat, N. and Vithessonthi, C. (2017). Corporate governance, capital structure and firm performance: evidence from Thailand. *Research in International Business and Finance*, 42 (1), pp. 689-709.
- Djalilov, K. and Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance*, 38, pp. 69–82.
- Djalilov, K., Vasylieva, T., Lyeonov, S. and Lasukova, A. (2015). Corporate Social Responsibility And Bank Performance In Transition Countries. *Corporate Ownership and Control*, 13(1).
- Dietrich, A. and Wanzenried, G (2011). Determinants of Bank Profitability Before and During the Crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money*, 21(3), pp.307–327.
- Dietsch, M. and Lozano-Vivas, A. (2000). How the environment determines banking efficiency: A comparison between French and Spanish industries. *Journal of Banking and Finance*, 24 (6), pp. 985-1004.
- Diamond, D.W. and Dybvig, P.H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91, pp. 401–419.
- Doumposa, M., Hasan, I. and Pasiourasa, F. (2017). Bank overall financial strength: Islamic versus conventional banks. *Economic Modelling* 64, pp. 513-523
- Drake, L. and Hall, M.J.B. (2003). Efficiency in Japanese banking: An empirical analysis. *Journal of Banking and Finance*, 27, pp. 891–917.
- Djalilov, K. and Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance*, 38, pp. 69–82.



- Dipasha, S., Anil, K.S. and Mukesh, K. B. (2013). Efficiency and productivity of banking sector: A critical analysis of literature and design of the conceptual model. *Qualitative Research in Financial Markets*, 5 (2), pp. 195-224.
- Dharmendra, S. and Bashir, A.F. (2015). Technical efficiency and its determinants: an empirical study on banking sector of Oman. *Problems and Perspectives in Management*, 13 (1).
- Eichengreen, B. and Gibson, H.D. (2001). Greek Banking at the Dawn of the New Millennium. *CEPR Discussion Paper*.
- Emmanuel, S.K., Joshua, A., Anthony, Q.Q. A. and Mohammed, A. (2017). Freedom, competition and bank efficiency in Sub-Saharan Africa. *International Journal of Law and Management*, 59(6), pp.1359-1380.
- Fahad, P. and Busru, S.A. (2021). CSR disclosure and firm performance: Evidence from an emerging market. *Corporate Governance: International Journal of Business in Society*
- Famiyeh, S. (2017). Corporate social responsibility and firm's performance: Empirical evidence. *Social Responsibility Journal*, 13(2), pp. 390–406.
- Fan, Y., Jiang, Y., Zhang, X. and Zhou, Y. (2019). Women on Boards and bank earnings management: From zero to hero. *Journal of Banking and Finance*, 107
- Farag, H., Mallin, C. and Ow-Yong, K.(2017). Corporate governance in Islamic banks: New insights for dual board structure and agency relationships. *Journal of International Financial Markets, Institutions and Money*, 59 (7), 59-77.
- Farag, H., and Mallin, C. (2017). Board diversity and financial fragility: Evidence from European banks. *International Review of Financial Analysis*, 49, pp. 98–112.
- Farrell, M.J. (1957). The measurement of productive efficiency. *Journal of Royal Statistical Society*, 120, pp. 253-281.

- Fatemi, A., Glaum, M. and Kaiser, S. (2018). ESG performance and firm value: the moderating role of disclosure. *Global Finance Journal*, 38, pp. 45-64.
- Fernandez, M.R. (2015). Social responsibility and financial performance: The role of good corporate governance. *BRQ Business Research Quarterly*, 19, pp. 137-151.
- Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman, Marshfield.
- Friedman, M. (1970). The social responsibility of business is to increase its profits. *N. Y. Times Mag.*, pp. 32-33.
- Faten, L., Amal, A., Nadia, L. and Adnane, M. (2015). Do women on boards and in top management reduce earnings management? Evidence in France. *Journal of Applied Business Research*, 31(3), pp. 1107-1118
- Forgione, A.F., Laguir, I. and Staglianò, R. (2020). Effect of corporate social responsibility scores on bank efficiency: The moderating role of institutional context. *Corporate Social Responsibility and Environmental Management*.
- Gardener, E., Molyneux, P. & Nguyen-linh, H. (2012). Determinants of Efficiency in South East Asian Banking. *The Service Industries Journal*, 31(16), pp. 2693-2719.
- Gangi, F., Mustilli, M., Varrone, N. and Daniele, L.M. (2018). Corporate social responsibility and banks' financial performance. *International Business Research*, 11(10).
- Galant, A. and Cadez, S. (2017). Corporate social responsibility and financial performance relationship: A review of measurement approaches. *Economic Research- Ekonomska Istraživanja*, 30(1), pp. 676-693.
- Gitau, P.M., Anyango, W. and Rotich, G. (2017). Effect of Micro Economic Factors On Performance Of Listed Commercial Banks In Kenya. *The Strategic Journal Of Business And Change Management*, 4 (2), pp. 763-778.

- Ghosh, S. (2017). Why is it a man's world, after all? Women on bank boards in India. *Economic Systems*, 41(1), pp. 109-121.
- Goddard, J., Liu, H., Molyneux, P. and Wilson, J.O.S. (2013). Do Bank Profits Converge? *European Financial Management*, 19, pp. 345-65.
- Goldberg, L.G. and Rai, A.A. (1996). The structure-performance relationship for European banking. *Journal of Banking and Finance*, 20, pp. 745-771.
- Gordini, N., and Rancati, E. (2017). Gender diversity in the Italian boardroom and firm financial performance. *Management Research Review*, 40 (1), pp. 75-94.
- Gray, R., Kouhy, R. and Lavers, S. (1995). Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure, *Accounting, Auditing & Accountability Journal*, 8 (2), pp. 47-77.
- Grigorian, D.A. and Manole, V. (2002). Determinants of commercial bank performance in transition: an application of data envelopment analysis. *Comparative Economic Studies*, 48 (3), pp.497-522.
- Green, C.P., and Homroy, S. (2017). Female directors, board committees and firm performance. *European Economic Review*, 102 (2), 19-38.
- Gurley, J. G., and Shaw, E. S. (1960). Money in a Theory of Finance. *Washington, DC: Brookings Institution*, 1960.
- Gul, S., Irshad, F. and Zaman, K. (2011). Factors affecting bank profitability in Pakistan. *The Romanian Economic Journal*, 39(14), pp. 61-89.
- Guttentag, J. M. and Lindsay, R. (1968). The uniqueness of commercial banks. *Journal of Political Economy*, 71, pp. 991-1014.

- Guest, P.M. (2009). The impact of board size on firm performance: Evidence from the UK. *The European Journal of Finance*, 15 (4), pp. 385 – 404.
- Hamad, H.B. (2010). Board Characteristics and Earnings Management: An Empirical Evidence from Malaysian Listed Companies. Doctoral Dissertation. Universiti Utara Malaysia.
- Haris, M., Yao, H., Tariq, G., Javaid, H.M., and Ul Ain, Q. (2019). Corporate Governance, Political Connections, and Bank Performance. *International Journal of Financial Studies*, 7 (62).
- Hasanov, F.J., Bayramli, N., and Al-Musehel, N. (2018). Bank-Specific and macroeconomic determinants of bank profitability: evidence from an oil-dependent economy. *International Journal of Financial Studies*.
- Hassan, S.U. and Ahmed, A. (2012). Corporate Governance, Earnings Management and Financial Performance: A Case of Nigerian Manufacturing Firms. *American International Journal of Contemporary Research*, 2 (7).
- Hasan, I. and Wall, L.D. (2003). Determinants of the loan loss allowance: some cross-country comparisons. *Discussion Papers*
- Hasanul, B., Rubi, A. and Eric, H.Y.K. (2017). Determinants of Commercial Banks' Efficiency in Bangladesh: Does Crisis Matter? *Journal of Asian Finance, Economics and Business*, 4 (3), pp. 19-26.
- Havrylchyk, O. (2006). Efficiency of the Polish banking industry: Foreign versus domestic banks. *Journal of Banking and Finance*, 30.
- Healy, P., Wahlen, J. (1998). A Review of the Earnings Management Literature and its Implications for Standard Setting. *Accounting Horizons*, 13(4), pp. 365-384.

- Hemingway, C.A. and MacLagan, P.W. (2004). Managers' personal values as drivers of corporate social responsibility. *Journal of Business Ethics*, 50(1), pp. 33–44.
- Henriquesa, I.C., Sobreiroa, V.A., Kimuraa, H. and Marianob, E.B. (2018). Efficiency in the Brazilian banking system using data envelopment analysis. *Future Business Journal*, 4, pp.157-178
- Heritage Foundation (2017). Index of Economic Freedom, The Heritage Foundation, available at: [www.heritage.org/index](http://www.heritage.org/index)
- Herdjiono, I., and Sari, I. M. (2017). The Effect of Corporate Governance on the Performance of a Company. Some Empirical Findings from Indonesia. *Journal of Management and Business Administration*, 25(1), pp. 33-523
- Hicks, J. (1935). The theory of monopoly. *Econometric*, 3 (1), pp.1-20.
- Hossian, M., Sobhan, A. and Sultana, S. (2016). Application of DEA Methodology in Measuring Efficiency of Some Selected Commercial Banks in Bangladesh, *JUJSS*, 33, pp. 57-64
- Huse, M. and Solberg, A. G. (2006). Gender-related boardroom dynamics: How women make and can make contributions on corporate boards. *Women in Management Review*, 21(2), pp. 113-130.
- Ibrahim, S.S. (2017). The impacts of liquidity on profitability in banking sector of Iraq: A case of Iraqi Commercial banks
- Idries, M.A.J. and Hisham, G. (2009). The efficiency cost of market power in banking: a test of the "quiet life" and related hypotheses in Jordan's banking industry. *Investment Management and Financial Innovations*, 6(2).
- International Financial Statistics (2017). Available from International Monetary Fund. Retrieved from <http://www.imf.org/cn/Data>

- Ionascu, M., Ionascu, I., Sacarin, M., and Minu, M. (2018). Women on Boards and financial performance: evidence from a European emerging market, *Sustainability*.
- Isik, I. and Hassan, M.K. (2002). Technical, Scale and allocative efficiencies of Turkish banking industry. *Journal of Banking and Finance*, 26 (4), pp. 719-766.
- Islam, S. and Kassim, S. (2015). Efficiency of Islamic and Conventional Banks in Bangladesh: Comparative Study using DEA Approach. *Journal of Islamic Economics, Banking and Finance*, 11 (3).
- Ismail, F., Majid, A.M.S. and Rossazana, A.R. (2013). Efficiency of Islamic and conventional banks in Malaysia. *Journal of Financial Reporting and Accounting*, 11 (1), pp. 92-107.
- Iveta, R. (2015). Banking Efficiency Determinants in the Czech Banking Sector. *Procedia Economics and Finance*, 23, pp. 191 – 196.
- Jayati, S. and Subrata, S. (2018). Bank Ownership, Board Characteristics, and Performance: Evidence from Commercial Banks in India. *International Journal of Financial Studies*, 6 (1), 1-30.
- Jensen, M. and Meckling, W. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3 (4), pp. 305– 360.
- Johl, S. K., Kaur, S., and Cooper, B. J. (2015). Board characteristics and firm performance: Evidence from Malaysian public listed firms. *Journal of Economics, Business and Management*, 3(2), pp. 239–243.
- Jones, J. (1991). Earnings Management during Import Relief Investigations. *Journal of Accounting Research*, 29, pp. 193-228.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance*, 48(3), pp. 831–880.

- Jensen, MC. (2001). Value maximization, stakeholder theory, and the corporate objective function. *Journal of Applied Corporate Finance*, 14 (3), pp. 8–21.
- Kanter, R.M. (1977b). Some effects of proportions on group life: skewed sex ratios and responses to token women. *American Journal of Sociology*, 82 (5), pp. 965-990.
- Kang, S. and Kim, Y.S. (2011). Does Earnings Management Amplify The Association Between Corporate Governance And Firm Performance? Evidence From Korea
- Kassim, A. J. (2002). Risk Asset Management In Financial Institutions: Banks Experience. *Union Digest*.7 (1 and 2).
- Keffas, G. and Olulu-Briggs, O. (2011). Corporate social responsibility: how does it affect the financial performance of banks? Empirical evidence from US, UK and Japan. *Journal of Management and Corporate Governance*, 3, pp. 8-26.
- Kilic, M. (2015). The Effect of Board Diversity on the Performance of Banks: Evidence from Turkey. *International Journal of Business and Management*, 10 (9).
- Kiel, G.C. and Nicholson, G.J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance*, 11 (2), pp. 189-205.
- Khan, M.U.H. and Hanif, M.N. (2018). Empirical evaluation of ‘structure-conduct-performance’ and ‘efficient-structure’ paradigms in the banking sector of Pakistan. *International Review of Applied Economics*.
- Khan, Ijaz and Aslam (2014). Determinants of Profitability of Islamic Banking Industry: An Evidence from Pakistan. *Business and Economic Review*, 6 (2), pp.27-46.

- Khurshid, M.K., Shaheer, H., Nazir, N., Waqas, M. and Kashif, M. (2017). Impact of Corporate Social Responsibility On Financial Performance: The Role Of Intellectual Capital. *City University Research Journal*.
- Konrad, A. M., Kramer, V. and Erkut, S. (2008). Critical mass: The impact of three or more women on corporate boards. *Organizational Dynamics*, 37(2), pp. 145–164.
- Kramer, V., Konrad, A., Erkut, S. and Hooper, M. (2016). Critical Mass on Corporate Boards: Why Three or More Women Enhance Governance. *National Association of Corporate Directors, Washington, DC*, pp. 19-22.
- Krause, R., Semadeni, M. and Cannella, A.A. (2014). CEO Duality: A Review and Research Agenda. *Journal of Management*, 40 (1), PP. 256–286.
- Kusi, B.A., Gyeke-Dako, A., Agbloyor, E.K. and Darku, A.B. (2018). Does corporate governance structures promote shareholders or stakeholders value maximization? Evidence from African banks. *Corporate Governance: The International Journal of Business in Society*, 18 (2), pp.270-288.
- Kwak, W., Lee, H.-Y., and Eldridge, S. W. (2009). Earnings management by Japanese bank managers using discretionary loan loss provisions. *Review of Pacific Basin Financial Markets and Policies*, 12(1), pp. 1-26.
- La Porta, R., Lopez, D.S. F. and Shleifer, A. (2002). Government ownership of banks. *Journal of Finance*, 57, pp. 256–301.
- Latif, K., Bhatti, A.A. and Raheman, A. (2018). Interactions between corporate governance, earnings quality attributes and value of firm: empirical analysis from non-financial sector of Pakistan. *Business & Economic Review*, 9 (2), pp. 255-280
- Lensink, R. and Meesters, A. (2007). Institutions and bank performance: A stochastic frontier analysis.



- Lin, K.L., Doan, A.T. and Doong, S.C. (2016). Changes in ownership structure and bank efficiency in Asian developing countries: The role of financial freedom. *International Review of Economics and Finance*, 43, pp. 19-34.
- Liu, Y., Wei, Z. and Xie, F. (2014). Do women directors improve firm performance in China? *Journal of Corporate Finance*, 28, pp. 169-184
- Low, W.S., Ghazali, N. A., Ramlee, S. and Said, M.R. (2010). Economic freedom and banking development: The experiences of selected East Asian countries. *Journal Pengurusan*.
- Mahad, N., Zakaria, N. B. and Ismail, I. S. (2015). Earnings Manipulation among Malaysian firms, How boards sufficiently lent their governance skills in monitoring these activities. *International Business Management*, 9(6), pp. 1243-1248.
- Mahmood, K. and Malik, Q.A. (2018). Evaluation of Firm's Performance by Corporate Governance and Social Responsibility: a Moderating Role of Corporate Philanthropy. *NUML International Journal of Business and Management*, 13(1).
- Mahmood, I. and Abbas, Z. (2011). Impact of Corporate governance on financial performance of banks in Pakistan. *Institute of Interdisciplinary Business Research*, 2 (12), pp. 217-228.
- Majeed, M.T. and Zanib, A. (2016). Efficiency analysis of Islamic banks in Pakistan. *Humanomics*, 32 (1), pp.19-32.
- Mamatzakis, E., Kalyvas, A.N. and Piesse, J. (2013). Does regulation in credit, labour and business matter for bank performance in the EU-10 economies? *International Journal of the Economics of Business*, 20(3), pp.341-385.
- Mamatzakis, E., Zhang, X., and Wang, C (2017). Ownership structure and bank performance: An emerging market perspective

- Maria, I., and Sanchez, G. (2010). The effectiveness of corporate governance: Board structure and business technical efficiency in Spain. *Central European Journal of Operations Research, 18*, pp. 311-339.
- Maqbool, S. and Zameer, M.N. (2018). Corporate social responsibility and financial performance: an empirical analysis of Indian banks. *Future Business Journal 4*, pp. 84–93.
- Marquez, R. (2002). Competition, adverse selection and information dispersion in the banking industry. *Review of Financial Studies, 15*(3), pp. 901–926.
- Maudos, J. and de Guevara, J.F. (2007). The cost of market power in banking: social welfare loss vs cost inefficiency. *Journal of Banking and Finance, 31* (7), pp. 2103-2125.
- Mavrakana, C. and Psillaki, M. (2019). Do economic freedom and board structure matter for bank stability and bank performance?, MPRA Paper No. 95709.
- Meah, M. R., & Chaudhory, N. U. (2019). Corporate governance and firm's profitability: An emerging economy-based investigation. *Indian Journal of Corporate Governance, 12* (1), 71–93.
- Menicucci, E. and Paolucci, G. (2016). The determinants of bank profitability: empirical evidence from European banking sector. *Journal of Financial Reporting and Accounting, 14*(1), pp.86-115.
- Mensi, S. and Zouari, A. (2010). Efficient Structure versus Market Power: Theories and Empirical Evidence. *International Journal of Economics and Finance, 2* (4).
- Merendino, A., and Melville, R. (2019). The board of directors and firm performance: empirical evidence from listed companies. *Corporate Governance: The International Journal of Business in Society*, pp. 1472-0701.

- Mesut, D., Bilge, L.E., Veysel, A. and Serdar, O. (2013). The Impact of CEO Duality on Firm Performance: Evidence From Turkey. *International Journal of Business and Social Science*, 4(2).
- Mohammad, S.J., Abdullatif, M. and Zakzouk, F. (2018). The effect of gender diversity on the financial performance of Jordanian banks. *Academy of Accounting and Financial Studies Journal*, 22 (2).
- Mohamad, S., Abdurrahman, A.P., Keong, O.C. and Garrett, K.W.C. (2020). Corporate governance and earnings management: evidence from listed Malaysian firms. *Journal of Critical Reviews*, 7 (2).
- Mollah, S. and Zaman, M. (2015). Shari'ah supervision, corporate governance and performance: Conventional vs. Islamic banks. *Journal of Banking and Finance*, 58, pp. 418-435.
- Mollah, S., Hassan, M.K., Al Farooque, O. and Mobarek, A. (2017). 'The governance, risk-taking, and performance of Islamic banks, *Journal of Financial Services Research*, 51 (2), pp.195–219.
- Moslemamy, R.E. and Etab, M. (2017). The effect of corporate social responsibility disclosures on financial performance in the banking industry: empirical study on the Egyptian banking sector. *International Journal of Business and Economic Development*, 5 (1)
- Mravlja, L. (2017). The Impact of Corporate Social Responsibility of banks on their financial performance.
- Muda, I., Maulana, W., Siregar, H.S., and Indra, N. (2018). The Analysis of Effects of Good Corporate Governance on Earnings Management in Indonesia with Panel Data Approach. *Iranian Economic Review*, 22(2), pp.599-625.

- Muda, M., Uddin, A.S. and Embaya, A. (2013). Comparative Analysis of Profitability determinants of domestic and foreign Islamic banks in Malaysia. *International Journal of Economic and Financial Issues*, 3(3), pp.559-569
- Mumtaz, H.S. and Sajjad, K.(2017). Factors Affecting Commercial Banks Profitability in Pakistan. *Journal of Business and Tourism*, 3(1).
- Naceur, S.B. and Omran, M. (2010).The Effects of Bank Regulations, Competition, and Financial Reforms on Banks' Performance. *Emerging Markets Review*, 12, pp. 1–20.
- Naceur, S.B. and Kandil, M. (2009). The Impact of Capital Requirements on Banks' Cost of Intermediation and Performance: The Case of Egypt. *SSRN Electronic Journal*
- Naceur, S.B., Ben-Khedhiri, H. and Casu, B. (2009). What Drives the Efficiency of Selected MENA Banks? A Meta-Frontier Analysis. *Working Paper Series*
- Nadeem,M., Zaman,R. and Saleem, I. (2017). Board room gender diversity and corporate sustainability practices: evidence from Australian securities exchange listed firms. *Journal of Cleaner Production*, 149, pp. 874-885.
- Nanka-Bruce, D. (2011). Corporate Governance Mechanisms and Firm Efficiency, *International Journal of Business and Management*, 6 (5), pp. 28-40.
- Naseem, M.A., Xiaoming, S., Riaz, S. and Rehman, R.U. (2017). Board attributes and financial performance: the evidence from an emerging economy. *The Journal of Developing Areas*, 51 (3), pp.281-297.
- Niklas, G. and Rasmus, W. (2016). How does the market structure in a banking sector affect bank profitability during a financial crisis?
- Nizam, E., Ng, A., Dewandaru, G., Nagayev, R., Nkoba, M.A. (2019). The impact of social and environmental sustainability on financial performance: a global analysis of the banking sector. *Journal of Multinational.Finance.Manag.* 49,pp. 35–53.

- Nisar, S., Susheng, W., Ahmed, J. and Ke, P. (2015). Determinants of banks profitability in Pakistan: A Latest Panel Data Evidence. *International Journal of Economics, Commerce and Management*, III (4)
- Noguera, M. (2020). Women directors' effect on firm value and performance: the case of REITs, *Corporate Governance: The International Journal of Business in Society*, 20 (7), 1265-1279.
- Ohene-Asare, K. and Asmild, M. (2012). Banking Efficiency Analysis under Corporate Social Responsibilities. *International Journal of Banking Accounting and Finance*, 4(2), pp. 146-171.
- Olweny, T. and Shipho, T. M. (2011). Effects of Sectoral Factors on the Profitability of Commercial Banks in Kenya. *Economics and Finance Review*, 5, pp. 1-30.
- Ostadhashemi, A., Shafati, M. and Aliei, M. (2017). The Effect of the Corporate Governance on Disclosure Quality in Tehran Stock Exchange. *Journal of Administrative Management, Education and Training*, 13(2), pp. 216-226
- Owen, A.L. and Temesvary, J. (2018). The performance effects of gender diversity on bank boards. *Journal of Banking and Finance*, 90, pp. 50-63.
- Oyewumi, O.R., Ogunmeru, O.A. and Oboh, C.S. (2018). Investment in corporate social responsibility, disclosure practices, and financial performance of banks in Nigeria. *Future Business Journal*, 4, pp. 195-205.
- Pasiouras, F. (2008). International Evidence on the Impact of Regulations and Supervision on Banks' Technical Efficiency: An Application of two-stage Data Envelopment Analysis. *Review of Quantitative Finance and Accounting*, 30 (2), pp. 187-223.
- Pathan, S. (2009). Strong boards, CEO power and bank risk-taking. *Journal of Banking and Finance*, 33 (7), pp. 1340-1350.

- Pathan, S. and Faff, R. (2013). Does board structure in banks really affect their performance? *Journal of Banking and Finance*, 37(5), pp. 1573–1589.
- Percin, S. and T. Y. Ayan (2006). Measuring the efficiency of commercial banks in a developing economy: The case of Turkey. *Investment Management and Financial Innovations*, 3 (2), pp. 217-231.
- Pi, L. and Timme, S.G. (1993). Corporate control and bank efficiency. *Journal of Banking and Finance*, 17 (2/3), pp. 515-530.
- Phan, T.M.H. (2015). Market concentration, bank competition and bank efficiency in emerging Asian countries.
- Phan, H.T.M., Daly, K. and Akhter, S. (2016). Bank efficiency in emerging Asian countries. *Research in International Business and Finance*, 38, pp. 517–530
- Phan, T., Daly, K. and Doan, A.T. (2018). The effects of risks and environmental factors on bank cost efficiency: a study in East Asia and Pacific region. *Cogent Economics and Finance*.
- Phung, M.T., Cheng, C.P. and Kao, C.Y. (2018). Ownership structure and efficiency of banking industry in China and Vietnam- A Political view. *International Journal of Financial Research*, 9 (3).
- Phung, D.N. and Mishra, A.V. (2016). Ownership structure and firm performance: Evidence from Vietnamese listed firms. *Australian Economic Papers*, 55(1), pp. 63–98.
- Rahmawati and Dianita, P.S. (2011). Analysis of the effect of corporate social responsibility on financial performance with earnings management as a moderating variable. *Journal of Modern Accounting and Auditing*, 7(10), pp. 1034-1045.

- Raphael, G. (2013). Bank-specific, industry-specific and macroeconomic determinants of bank efficiency in Tanzania: A two stage analysis. *European Journal of Business and Management*, 5(2).
- Raza, A., Jawaid, T., and Shafqat, J. (2013). Profitability of the Banking Sector of Pakistan: Panel Evidence from Bank-Specific, Industry-Specific and Macroeconomic Determinants. *MPRA Munich Personal RePEc Archive*.
- Rashid, M. (2020). Ownership structure and firm performance: the mediating role of board characteristics. *Corporate Governance*, 20 (4), pp.719-737
- Rashidah, A.R., Fairuzana, H. and Ali, M. (2006). Board, audit committee, culture and earnings management: Malaysian evidence. *Managerial Auditing Journal*, 21 (7), pp.783-804.
- Reguera-Alvarado, N., de Furentes, P., and Laffarga, J. (2015). Does board gender diversity influence financial performance? Evidence from Spain, *Journal of Business Ethics*,
- Reguera-Alvarado, N., Ruiz, P.D.F., and Laffarga, J. (2017). Does board gender diversity influence financial performance? Evidence from Spain. *Journal of Business Ethics*, 141 (2).
- Richardson, V. (2000). Information asymmetry and earnings management: Some evidence. *Review of Quantitative Finance and Accounting*, 15, pp. 325-347.
- Riyadh, H.A., Sukoharsono, E.G. and Alfaiza, S.A. (2019). The impact of corporate social responsibility disclosure and board characteristics on corporate performance. *Cogent Business and Management*, 6 (1), 1-18.
- Rodney, C.B. and Jing, X. (2018). The impact of liquidity on profitability: an explanatory study of the banking sector between 2007 and 2017.

- Rosman, R., Abd Wahab, N. and Zainol, Z. (2014). Efficiency of Islamic banks during the financial crisis: An analysis of Middle Eastern and Asian countries. *Pacific-Basin Finance Journal* 28, pp. 76–90
- Rossi, S., Schwaiger, M. and Winkler, G. (2005). Managerial Behavior and Cost/Profit Efficiency in the Banking Sectors of Central and Eastern European Countries. *Working Paper No. 96*.
- Saeed, M.S. (2014). Bank-related, Industry-related and Macroeconomic Factors Affecting Bank Profitability: A Case of the United Kingdom. *Research Journal of Finance and Accounting*, 5 (2)
- Saha, A., Ahmad, N. H. and Dash, U. (2015). Drivers of technical efficiency in Malaysian banking: A new empirical insight. *Asian-Pacific Economic Literature*, 29 (1), pp. 161-173.
- Sahin, K., Basfirinci, C.S. and Ozsalih, A. (2011). The impact of board composition on corporate financial and social responsibility performance: Evidence from public-listed companies in Turkey. *African Journal of Business Management*. 5(7), pp. 2959–2978.
- Salike, N., and Ao, B. (2017). Determinants of banks profitability: role of poor asset quality in Asia. *China Finance Review International*
- Salim, R., Arjomandi, A. and Seufert, J.H. (2016). Does Corporate Governance Affect Australian Banks' Performance? *Journal of International Financial Markets, Institutions and Money*.
- Salim, D. (2013). Do women in top management affect firm performance? Evidence from Indonesia. *Corporate Governance: The international journal of business in society*, 13 (3), pp.288-304.



- Saleh, M., Zulkifli, N. and Muhamad, R. (2010). Corporate social responsibility disclosure and its relation on institutional ownership: Evidence from public listed companies in Malaysia. *Managerial Auditing Journal*, 25(6), pp.591–613.
- Samad, A. (2008). Market structure, conduct and performance: evidence from the Bangladesh banking industry. *Journal of Asian Economics*, 19 (2), pp.181–193.
- Sarpong-Kumankoma, E., Abor, J.Y., Aboagye, A.Q.Q. and Amidu, M. (2021). Economic freedom, competition and bank stability in Sub-Saharan Africa, *International Journal of Productivity and Performance Management*, 70 (7), pp. 1510-1527.
- Saunders, M., Lewis, P. and Thornhill A., (2003). *Research Methods for Business Students* (Second edition). *Essex: Pearson Education Limited*.
- Sathye, M. (2001). X-efficiency in Australian banking: An empirical investigation. *Journal of Banking and Finance*, 25, pp. 613-630.
- Sathye, M. (2005). Technical Efficiency of Large Bank Production in Asia and the Pacific. *Multinational Finance Journal*
- Scholtens, B. and Kang, F.C. (2013). Corporate Social responsibility and earnings management: Evidence from Asian Economies. *Corporate Social Responsibility and environmental management*, 20, pp.95-112
- Sealey, C. W. and Lindley, J. T. (1977). Inputs, outputs and theory of production cost at depository financial institutions. *Journal of Finance*, 32, pp. 1251–1266.
- Selcuk, E.A. (2019). Corporate Social Responsibility and Financial Performance: The Moderating Role of Ownership Concentration in Turkey. *Sustainability*.
- Shahabadi, A. and Samari, H. (2013). The Effect of Economic Freedom on Bank Performance. *Iranian Journal of Economic Studies*, 2 (1), pp. 123-142

- Szegedi, K., Khan, Y. and Lentner, C. (2020). Corporate Social Responsibility and Financial performance: Evidence from Pakistani Listed Banks. *Sustainability*, 12.
- Islam, S. and Nishiyama, S. (2016). The Determinants of Bank Profitability: Dynamic Panel Evidence from South Asian Countries. *Journal of Applied Finance & Banking*, 6 (3), pp. 77-97
- Shawtari, F.A., Ariff, M., Hamzah, S.A.R.(2015). Efficiency assessment of banking sector in Yemen using data envelopment window analysis: A comparative analysis of Islamic and conventional banks. *Benchmarking: An International Journal*, 22 (6), pp.1115-1140.
- Sherman, H.D. and Gold, G. (1985). Bank branch operating efficiency: evaluation with data envelopment analysis. *Journal of Banking and Finance*, 9 (2), pp. 297-315.
- Shepherd, W. (1982). *Economies of scale and monopoly profits*. Industrial Organization, Antitrust, and Public Policy (Ed.). pp. 41–68.
- Sial, M.S., Chunmei, Z., Khan, T. and Nguyen, V.K. (2018). Corporate social responsibility, firm performance and the moderating effect of earnings management in Chinese firms. *Asia-Pacific Journal of Business Administration*, 10( 2/3), pp.184-199
- Shleifer, A and Vishny, R (1997). A survey of corporate governance. *Journal of Finance*, 52(2), pp.737–783
- Simpson, W.G. and Kohers, T. (2002). The Link between Corporate Social and Financial Performance: Evidence from the Banking Industry. *Journal of Business Ethics*, 35 (2), pp. 97-109
- Soba, Erem and Ceylan (2016). The Impact Of Corporate Governance Practices On Bank Efficiency: A Case Of Turkey.

- Stiglitz, J. E. (1975). The theory of screening, education, and the distribution of income. *The American Economic Review*, 65(3), pp. 283–300.
- Strydom, M., Yong, H.A. and Rankin, M. (2016). A few good women? Gender diversity on Australian boards. *Australian Journal of Management*, 42 (3), pp. 404-427.
- Sufian, F. and Habibullah, S.M. (2010). Assessing the impact of financial crisis on bank performance: Empirical evidence from Indonesia. *ASEAN Economic Bulletin*, 27 (3), pp. 245-262.
- Sufian, F. and Habibullah, M.S. (2010). Developments in the efficiency of the Thailand banking sector: a DEA approach. *International Journal of Development Issues*, 9 (3), pp. 226-245
- Sufian, F. and Habibullah, S.M. (2010). Does economic freedom foster banks' performance? Panel evidence from Malaysia. *Journal of Contemporary Accounting and Economics*, 6, pp. 77-91.
- Sufian, F., Kamarudin, F. and Nassir, A. (2016). Determinants of efficiency in the Malaysian banking sector: Does bank origins matter? *Intellectual Economics*, 10, pp. 38-54.
- Sun, N., Salama, A., Hussainey, K., Habbash, M. (2010). Corporate environmental disclosure, corporate governance and earnings management. *Managerial Auditing Journal*, 25(7), pp. 679-700.
- Suteja, J., Gunardi, A. and Mirawati, A. (2016). Moderating Effect of Earnings Management on the Relationship Between Corporate Social Responsibility Disclosure and Profitability of Banks in Indonesia. *International Journal of Economics and Financial Issues*, 6(4), pp. 1360-1365.
- Syafri, M. (2012). Factors affecting bank profitability in Indonesia. *International Conference on Business and Management*, pp. 236-242.

- Talaso, P. L. (2015). The Effect of Micro and Macro-Economic Variables on the Financial Performance of Deposit Taking Microfinance Banks in Kenya. *Unpublished MSc. Thesis, Nairobi: University of Nairobi.*
- Tan, Y. (2016). The impacts of risk and competition on bank profitability in China. *Journal of International Financial Markets, Institutions and Money*, 40, pp. 85–110.
- Tan, Y. and Floros, C. (2013). Risk, Capital and Efficiency in Chinese Banking. *Journal of International Financial Markets, Institutions and Money*, 26, pp.378–93.
- Tanna, S., Pasiouras, F. and Nnadi, M. (2011). The Effect of board size and composition on the efficiency of UK banks. *International Journal of the Economics of Business*, 18(3), pp. 441–462.
- Taskin, D. (2015). The Relationship between CSR and Banks' Financial Performance: Evidence from Turkey.
- Tariq, T. and Yousif, A. (2018). The relationship between ownership structure and firm financial performance: Evidence from Jordan. *Benchmarking: An International Journal*, 25.
- Tiago, G., Cristina, G. and Tatiana, S. (2018). Women on the Board: Do They Manage Earnings? Empirical Evidence from European Listed Firms. *Review of Business Management*.
- Tomislava, P.K., Ana, A. and Mirjana, P.B. (2018). Measuring the impact of board characteristics on the performance of Croatian insurance companies. *International journal of engineering business management*, 10 (1), pp. 1-13.
- Torchia, M., Calabrò, A. and Huse, M. (2011). Women directors on corporate boards: from tokenism to critical mass. *Journal of Business Ethics*, 102(2), pp. 299-317.
- Trujillo-Ponce, A. (2012). What Determines the Profitability of Banks? Evidence from Spain, *Accounting and Finance*, 53(2).

- Uddin, S.M. and Suzuki, Y. (2014). The impact of competition on bank performance in Bangladesh: an empirical study. *International Journal of Financial Services Management*.
- Ujah, N.U., Brusa, J. and Okafor, C.E. (2017). The influence of earnings management and bank structure on bank performance: International evidence. *Managerial Finance*, 43 (7), pp.761-773
- Ujunwa, A. (2012). Board characteristics and the financial performance of Nigerian quoted firms. *Corporate Governance*, 12(5), pp. 656–674.
- Ullah, I., Fang, H., and Jebran, K. (2020). Do gender diversity and CEO gender enhance firms value? Evidence from an emerging economy. *Corporate Governance*, 20 (1), pp.44-66.
- Vafeas, N. and Theodorou, E. (1998). The relationship between board structure and firm performance in the UK. *The British Accounting Review*, 30 (4), pp. 383-407.
- Varnita, S., Niladri, D. and Jamini, K.P. (2018). Women on boards in India: a need or tokenism? *Management Decision*.
- Wasiuzzaman, S. and Gunasegavan, U.N. (2013). Comparative study of the performance of Islamic and conventional banks The case of Malaysia. *Humanomics*, 29 (1), pp. 43-60.
- Wahyudin, A. and Solikhah, B. (2017). Corporate governance implementation rating in Indonesia and its effects on financial performance. *The International Journal of Business in Society*, 17 (2), pp. 250–265.
- Weber, O. (2017). Corporate sustainability and financial performance of Chinese banks. *Sustainability Accounting, Management and Policy Journal*

- Williams, B. (2003). Domestic and international determinants of bank profits: foreign banks in Australia. *Journal of Banking and Finance*, 27(6), pp. 1185-1210.
- Williams, J. (2004). Determining Management Behaviour in European Banking. *Journal of Banking and Finance*, 28, pp. 2427–2460.
- Wicaksana, K.A.B., Yuniasih, N.W. and Handayani, L.N.C. (2017). Board diversity and earning management in companies listed in Indonesian stock exchange. *International Journal of Scientific and Research Publications*, 7 (12).
- World Development Indicators.(2017). Available from the World Bank. Retrieved from [http:// www.worldbank.org/](http://www.worldbank.org/)
- Wu, M.W. and Shen, C.H. (2013). Corporate social responsibility in the banking industry: motives and financial performance. *Journal of Banking and Finance*, 37, pp. 3529–3547.
- Yao, H., Haris, M. and Tariq, G. (2018). Profitability Determinants of Financial Institutions: Evidence from Banks in Pakistan. *International Journal of Financial Studies*, 6, (53).
- Yasir, S., Saba, I. and Hina, Y. (2014). Impact of Boards Gender Diversity on Firms Profitability: Evidence from Banking Sector of Pakistan. *European Journal of Business and Management*, 6 (7)
- Yildirim, H.S. and Philippatos, G.C. (2007). Efficiency of banks: recent evidence from the transition economies of Europe, 1993-2000. *European Journal of Finance*, 13
- Yonnedi, E. and Panjaitan, A.R. (2019). Efficiency and Productivity Analysis of Indonesian Regional Development Banks: Multi-Stage DEA Approach and Malmquist Productivity Index. *Journal of Business and Management*, 20 (2), pp. 145-174

- Zheng, C., Rahman, M.M., Begum, M. and Ashraf, B.N. (2017). Capital regulation, the cost of financial intermediation and bank profitability: evidence from Bangladesh. *Journal of Risk and Financial Management*.
- Zhu, N., Stjepcevic, J., Baležentis, T., Yu, Z. and Wang, B. (2017 ). How does corporate social responsibility impact banking efficiency: a case in China. *Ekonomika a management*

## List of Appendices

**Table-10. Stakeholders, their expectations, and Bank Responsibilities**

S #.	Stakeholders	Their Concerns/Expectations	Bank Responsibilities
1	Shareholders/ investors	Generate a higher return on investments and dividend policy  Increasing earnings  Performance and integrity of the board and management  Effective governance and risk management  Better credit ratings	Profit maximization and shareholders' wealth  Effective monitoring and oversight role of the BoDs  Ethical standards and Code of conduct  responsible lending and investment
2	Board and management	Oversight role in managing the affairs of the firm  Formulate strategies and policies that create more business and value creation  Approve statutes, rules, and regulations  Better compensation packages	Size of the board, CEO duality, Frequent board meetings, audit committee meetings, Gender Diversity
3	Customers	Quality service delivery  Higher return on their amounts  Competitive rates, interests, and commissions  Security/dispute resolution  Easy and cheapest availability of information related to services	Maintain secrecy about their customers  Internet Services such as mobile apps, E-commerce, E- payment solution, online banking
4	Employees	Career and development policy  Human development policy/Training Policy  Diversity and equal opportunity  Health and safety policy  Equitable treatment and fair compensation  Compliant acceptance mechanism and	Better working conditions for all the employees  Encourages good performers



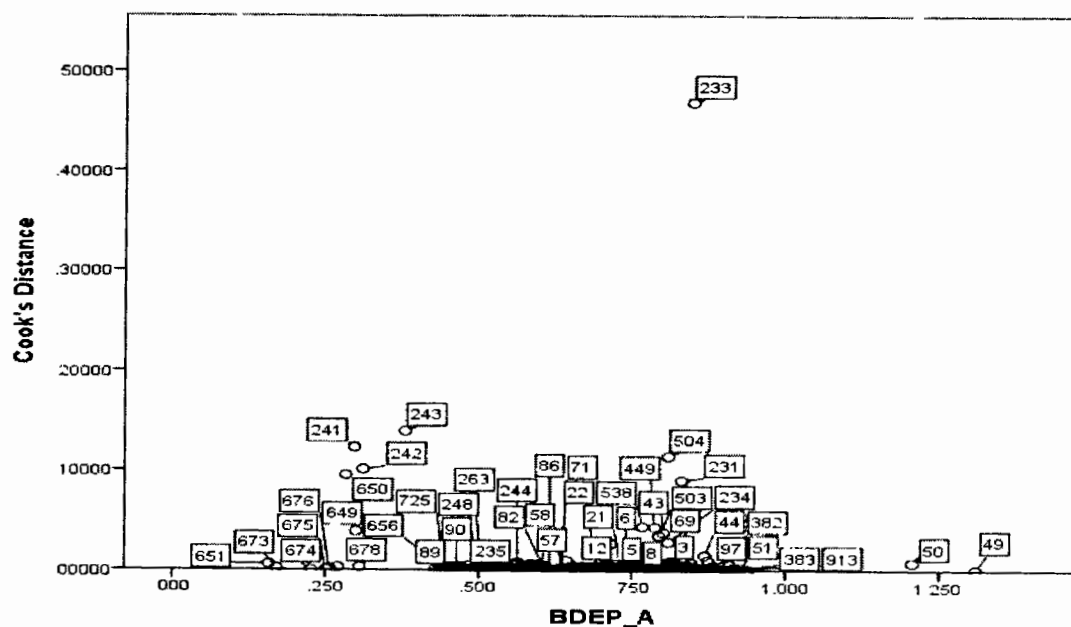
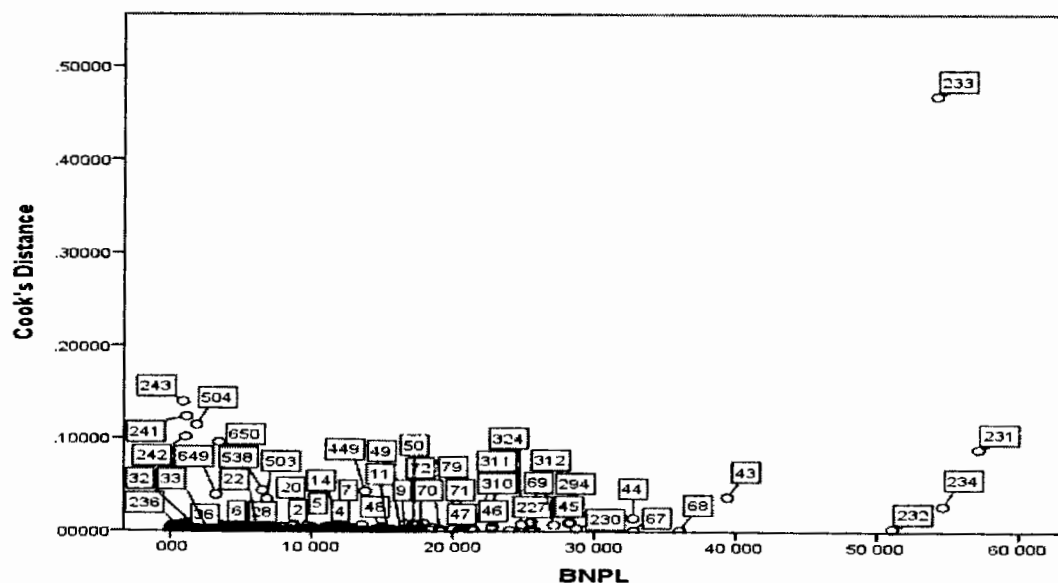
	channels		
5	Government and regulators	<p>conformity with national policies, rules, and regulations</p> <p>SMART provision of financial and other disclosure as required by in-laws</p> <p>Timely payment of tax to the government</p> <p>Serving the real economy</p> <p>Lending in line with national government policies, UN SDGs, and firm objectives</p>	<p>Formulate, disseminate and observe a mechanism that promotes the principles of effective governance and ethical standards at all tiers of the firms</p> <p>comply with rules and regulations</p> <p>increase the revenue of the government</p>
	Communities, environment, and society	<p>Promotes green and responsible financing</p> <p>Promotes charities and philanthropic activities</p> <p>Environmental protection</p> <p>Energy management</p>	<p>Improve the livings standards of the people</p> <p>Promotes in house environmental management system</p> <p>Getting NOC from the environmental-related departments before advancing loans to the creditors</p>
	Creditors	<p>Timely availability of interest and loan payment</p> <p>Timely provision of all the information</p>	<p>Better monitoring mechanism for the timely return of loans from the creditors</p>

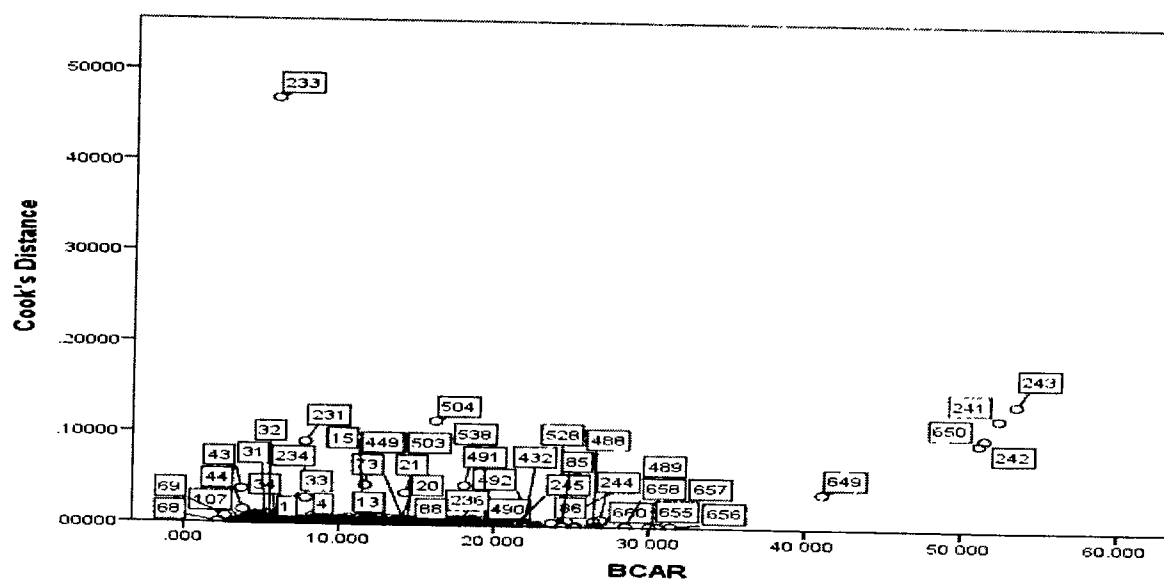
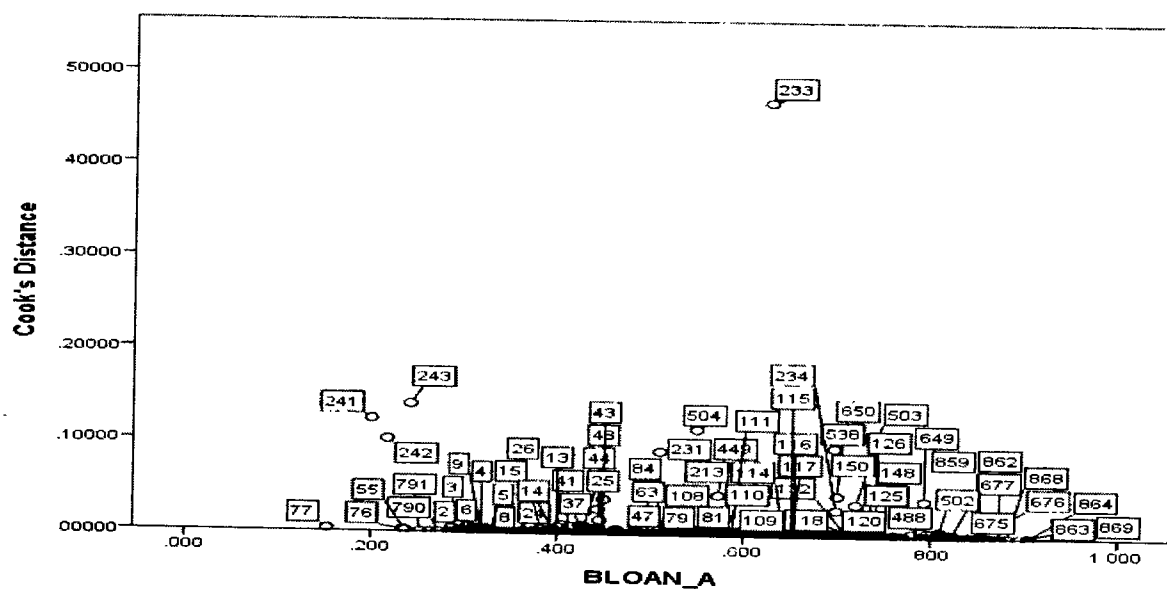
Note: The above table indicates the number of stakeholders, their concerns, and banks' responsibilities. There are two types of stakeholders: internal (board of directors, employees) and external (shareholders, investors, depositors, regulators, credit rating agencies, community development, environmentalist, etc.). Both types of stakeholders have their interests/expectations from banks. To meet the expectations of various stakeholders, the banks should invest responsibly and engage the stakeholders in the decision-making process. Numerous factors force banks to invest responsibly, such as materiality (increasing recognition that ESG factors can affect risk and return), stakeholder's demand/expectations (growing demands from beneficiaries and clients for greater transparency about how their money is invested), and regulations (more guidance from regulators that considering ESG factors is part of an investor fiduciary duty). The materiality issues are identified in collaboration with stakeholders via participation processes such as surveys, in-depth interviews, questionnaires, etc. These viewpoints are then examined, ranked, and finalized. Four steps are followed: identification, prioritization, validation, and approval/review for materiality assessment. (i) Identify material ESG factors in

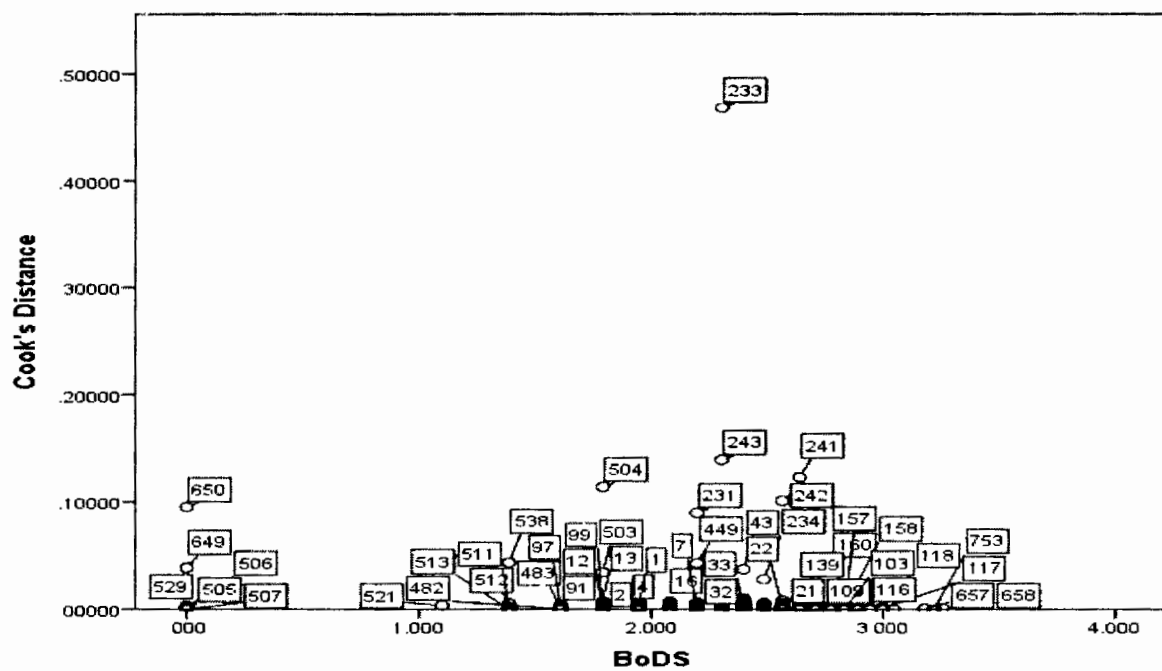
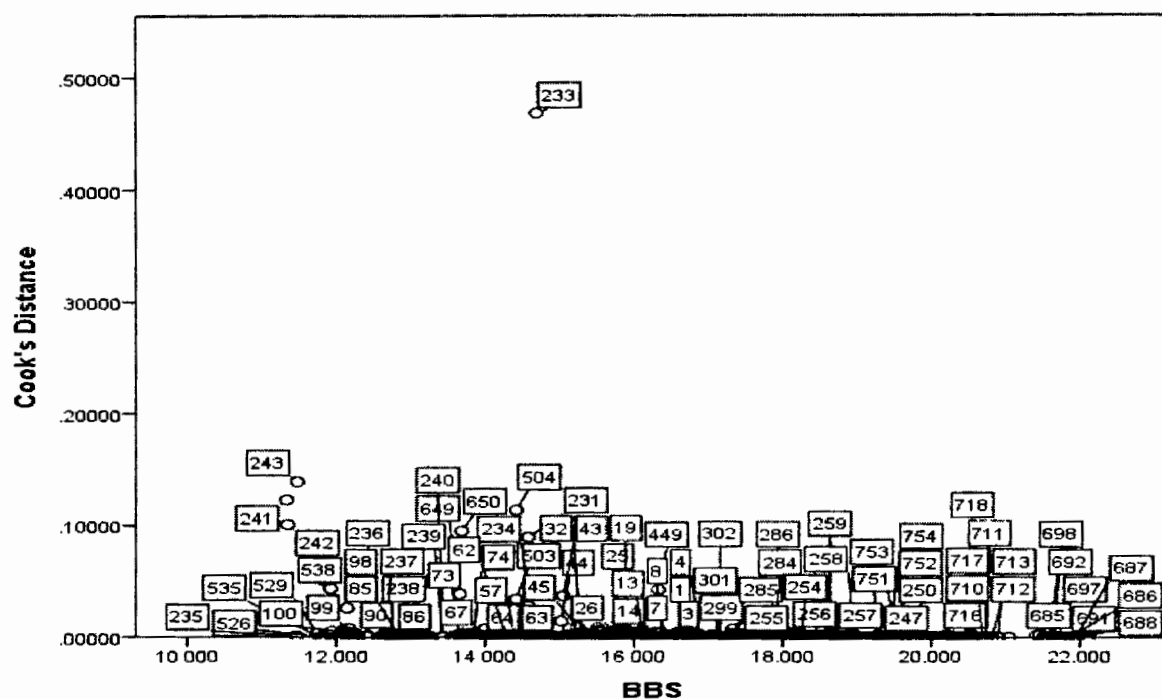
consultation with the number of stakeholders; engage various business units, studies national and international policies/commitments such as UN Sustainable Development Goals (UN SDG), UN Global Compact (UN GC), and UN Environment Program Finance Initiative (UNEPFI). However, the bank focuses on national policies/guidelines issued by regulatory authorities of each country; (ii) Prioritize material ESG factors in accordance with stakeholder's demands, its influence on organization performance, and linkage with firm objectives; (iii) Corroborate the material ESG factors ; (iv) Assess the relevancy of the material ESG factors with organization objectives and stakeholders demands

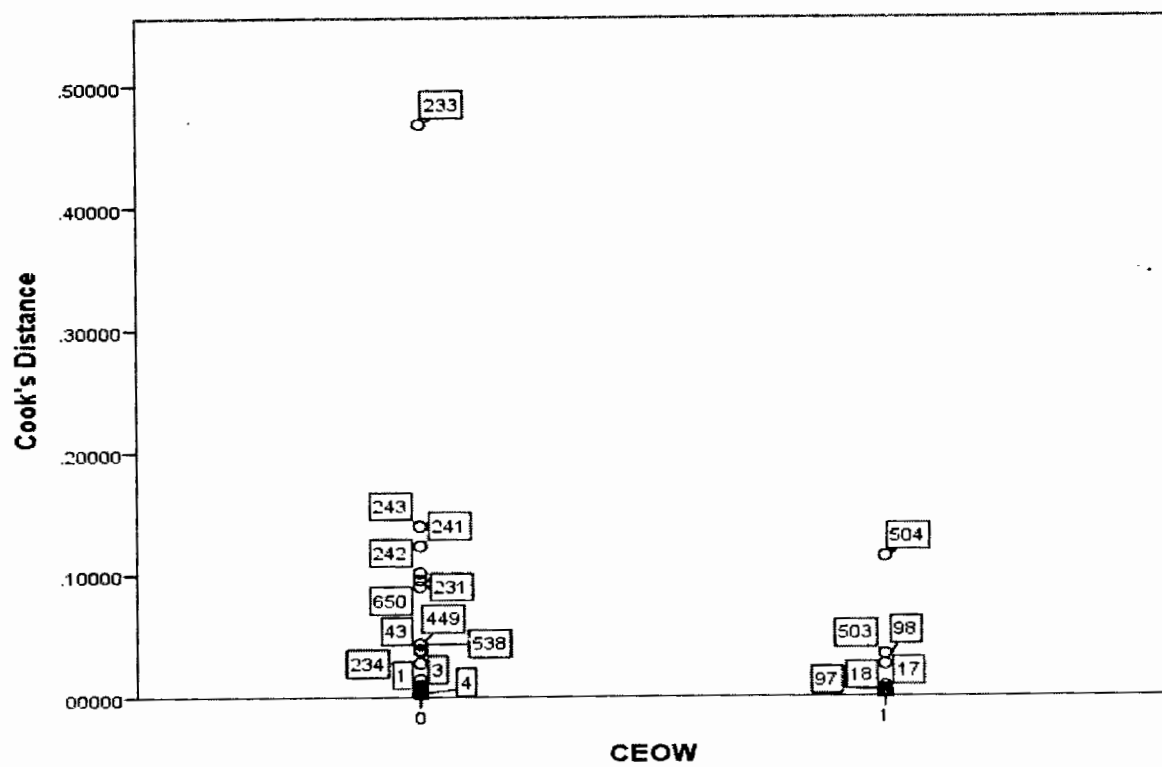
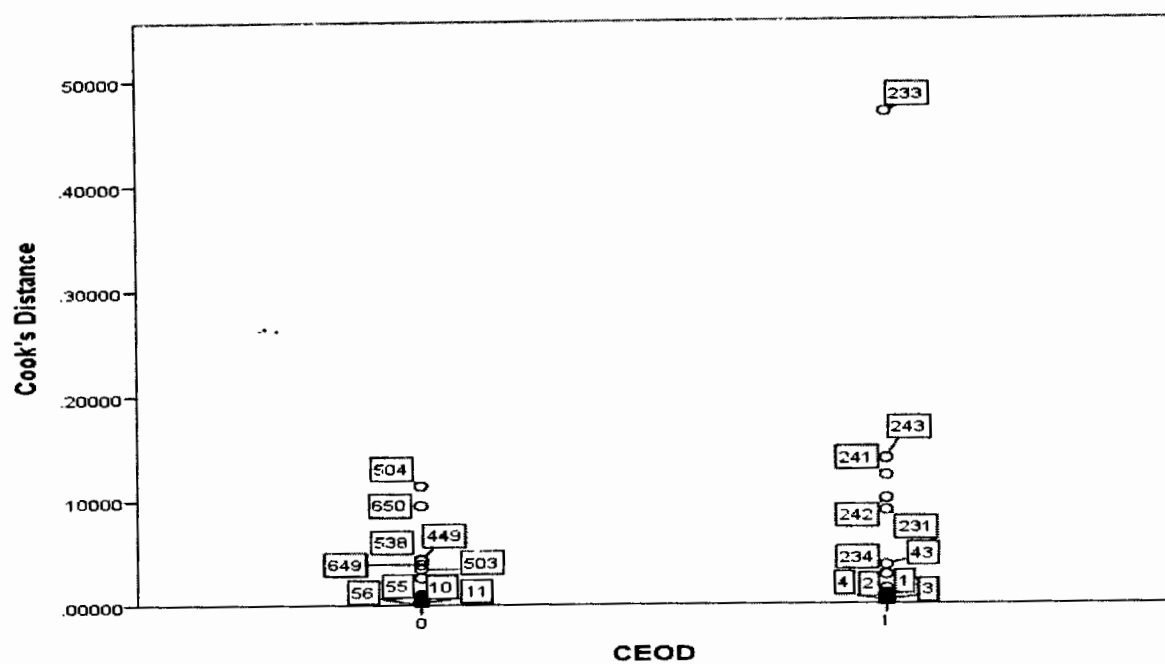
### Graphs-3 (a). Applying Cook Distance to Check Outliers on 179 Sampled Banks

The graphical depiction of cook distance on samples of 179 commercial banks of ten countries in the Asia-Pacific region is as under;

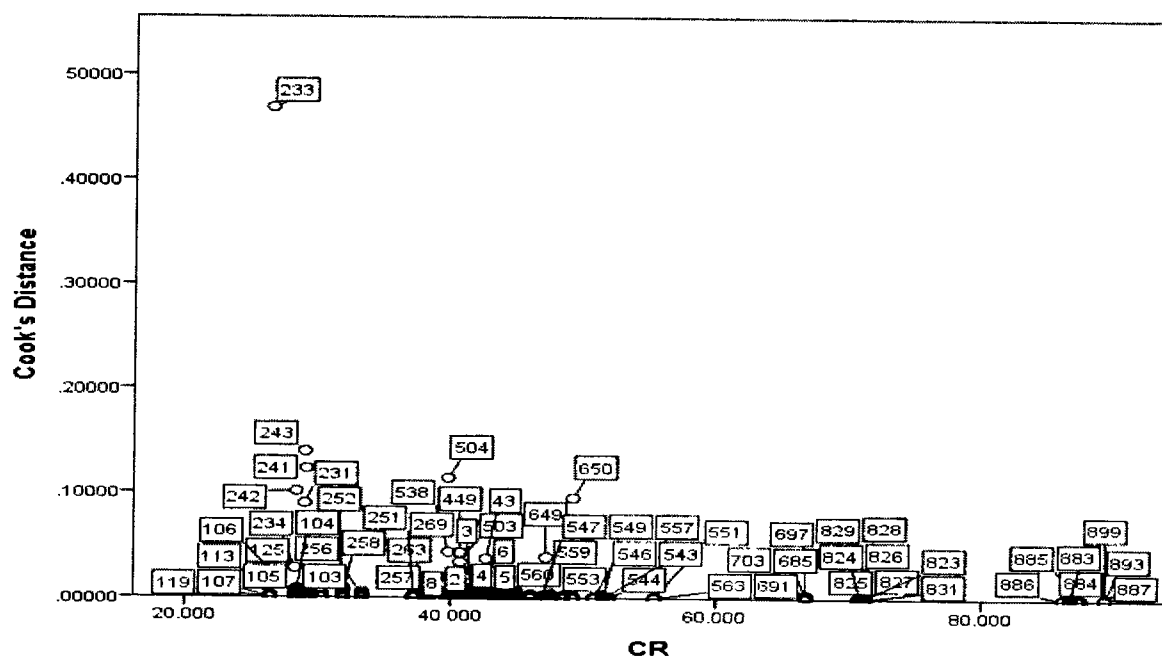
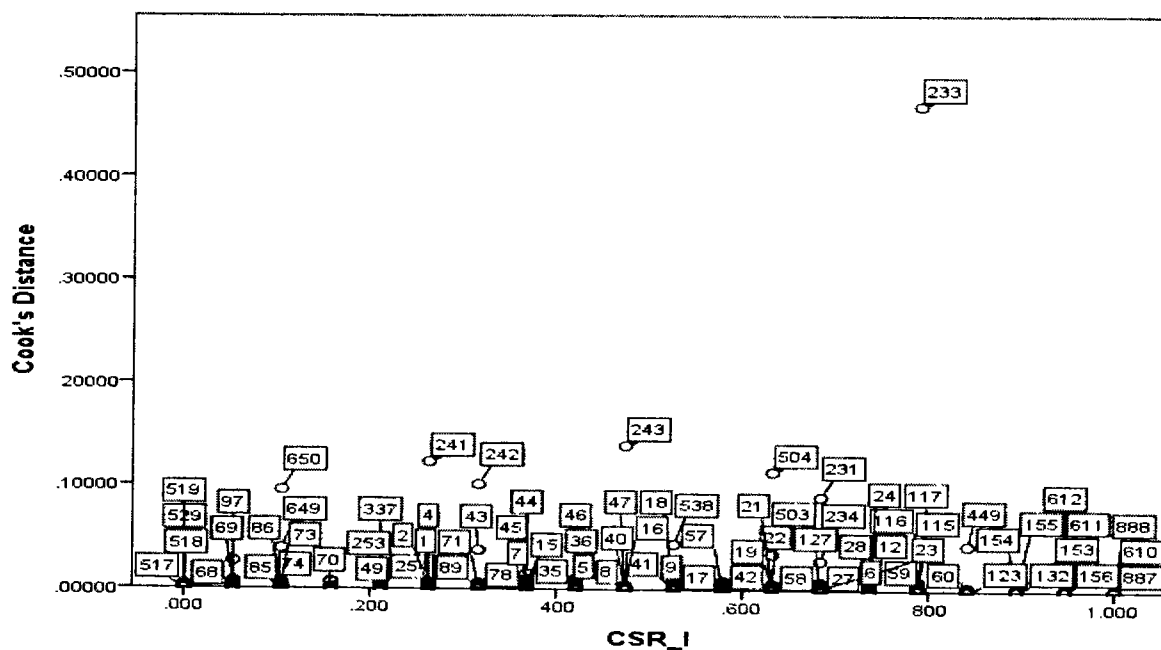




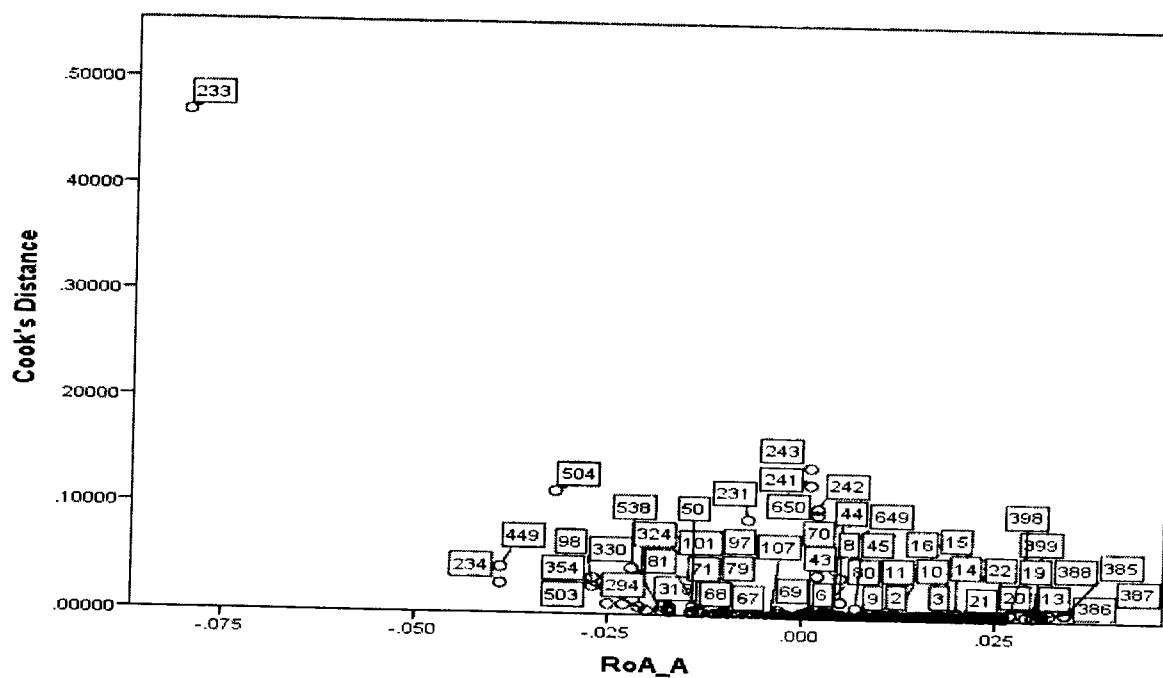
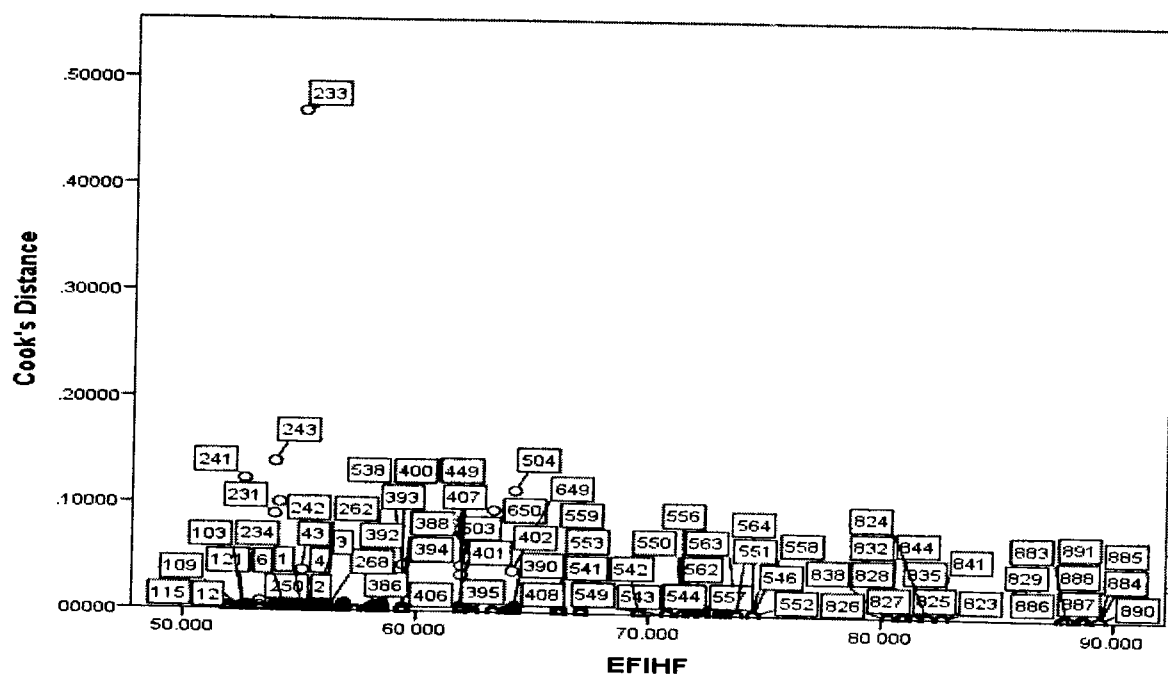


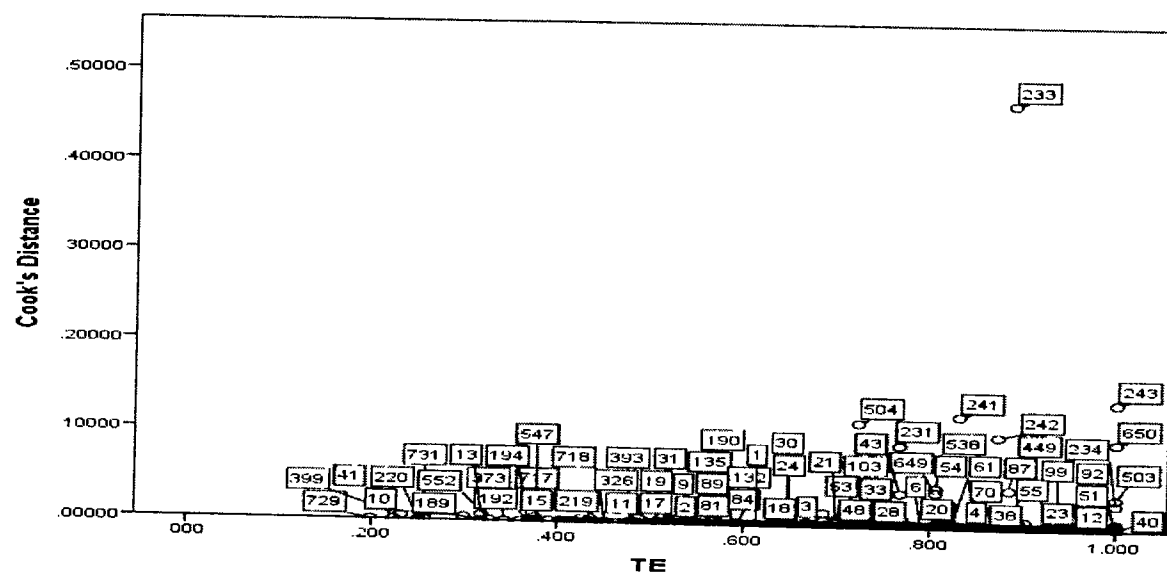






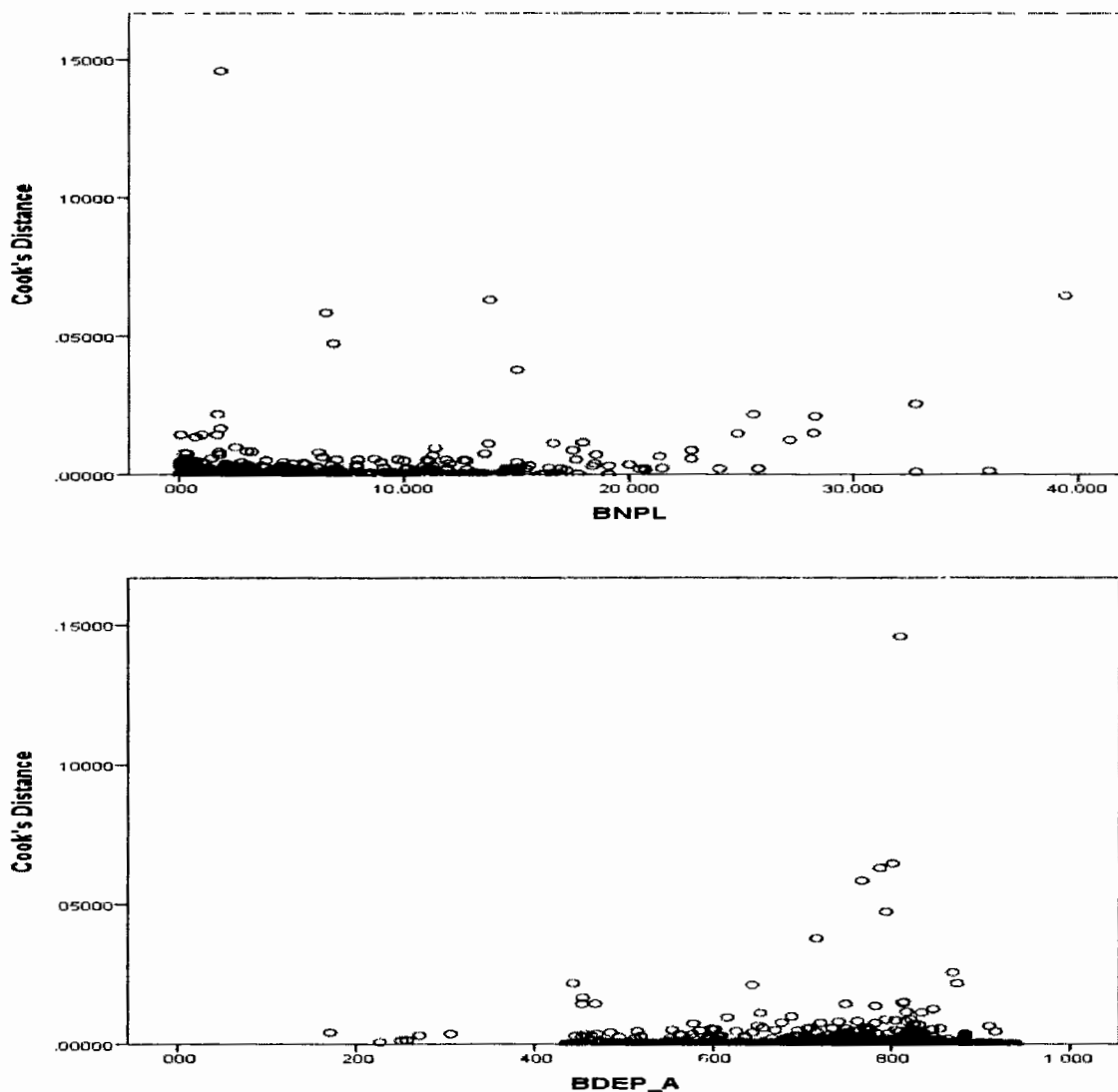


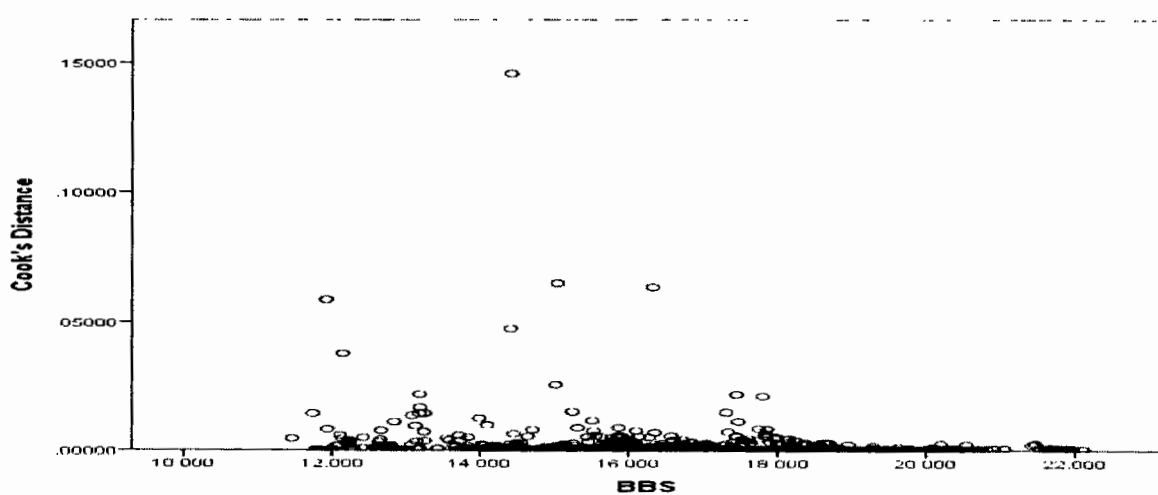
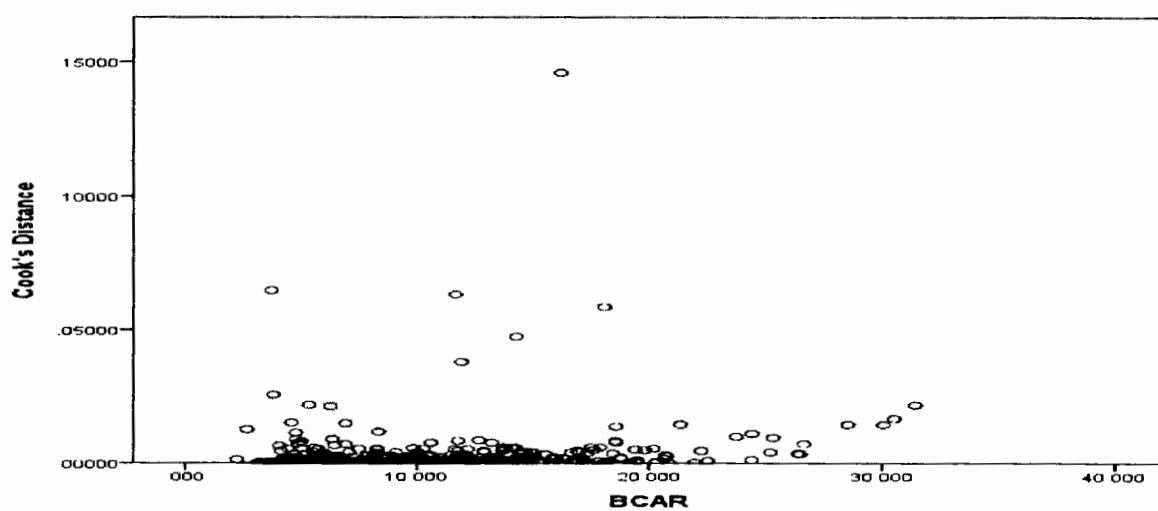
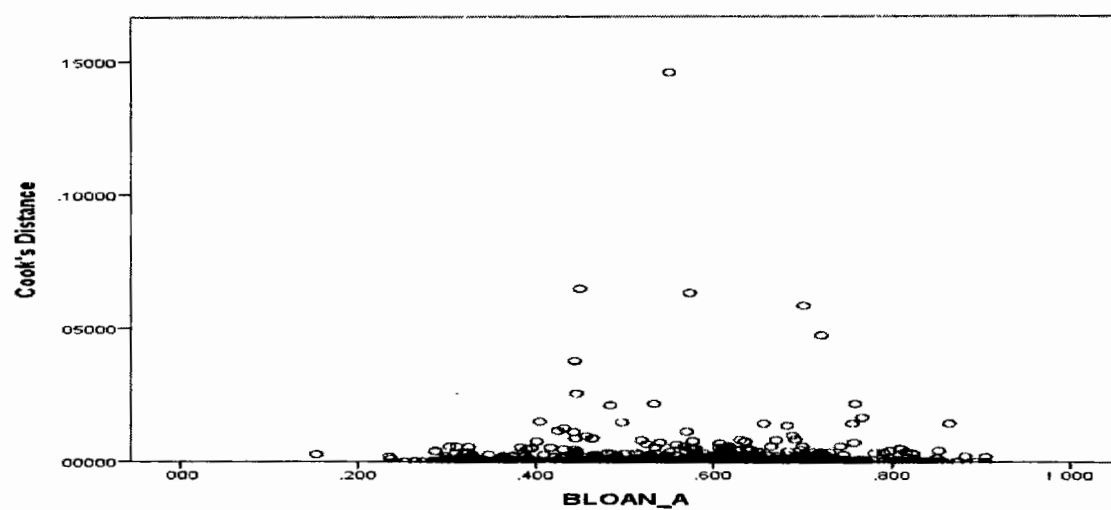


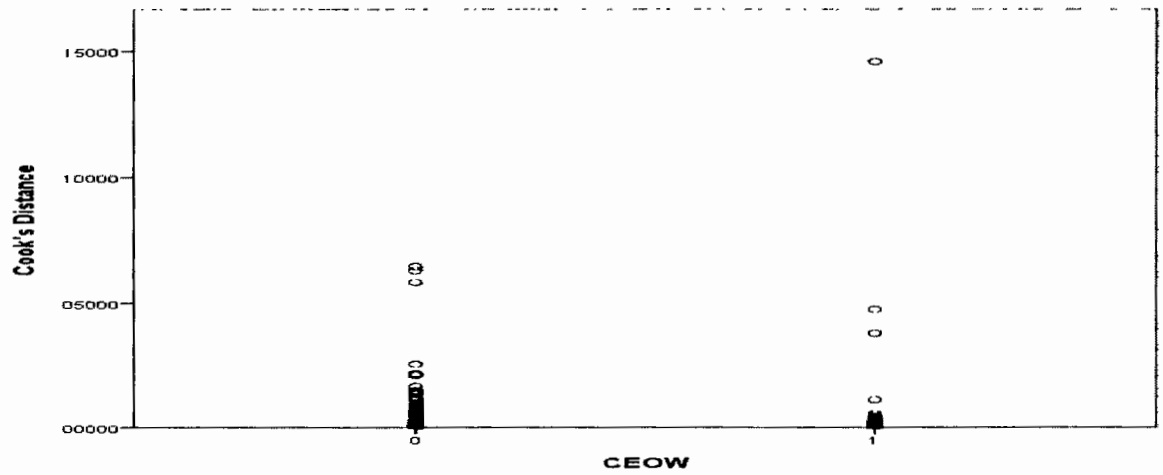
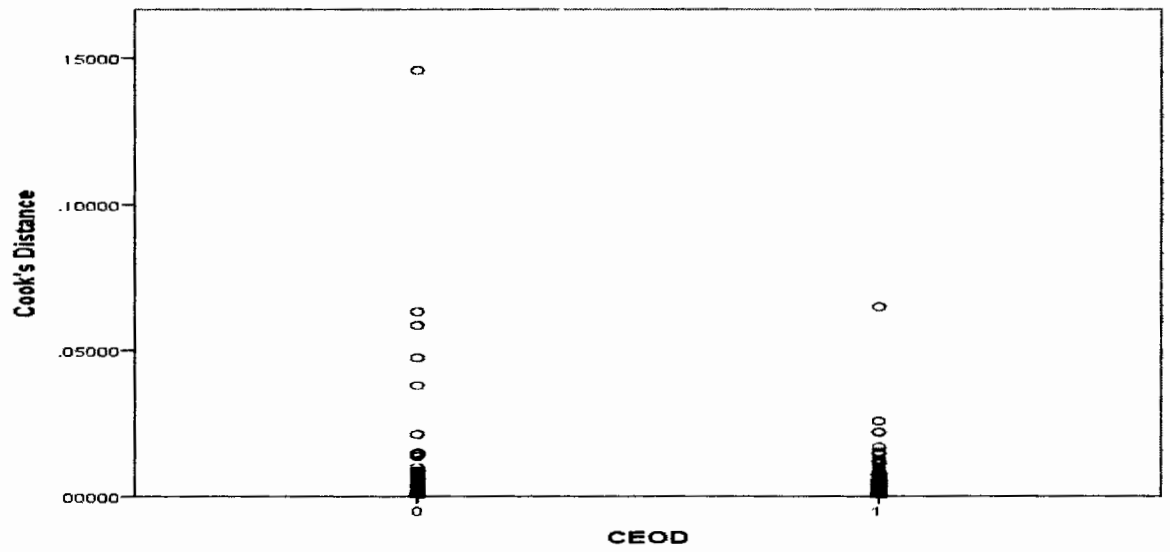
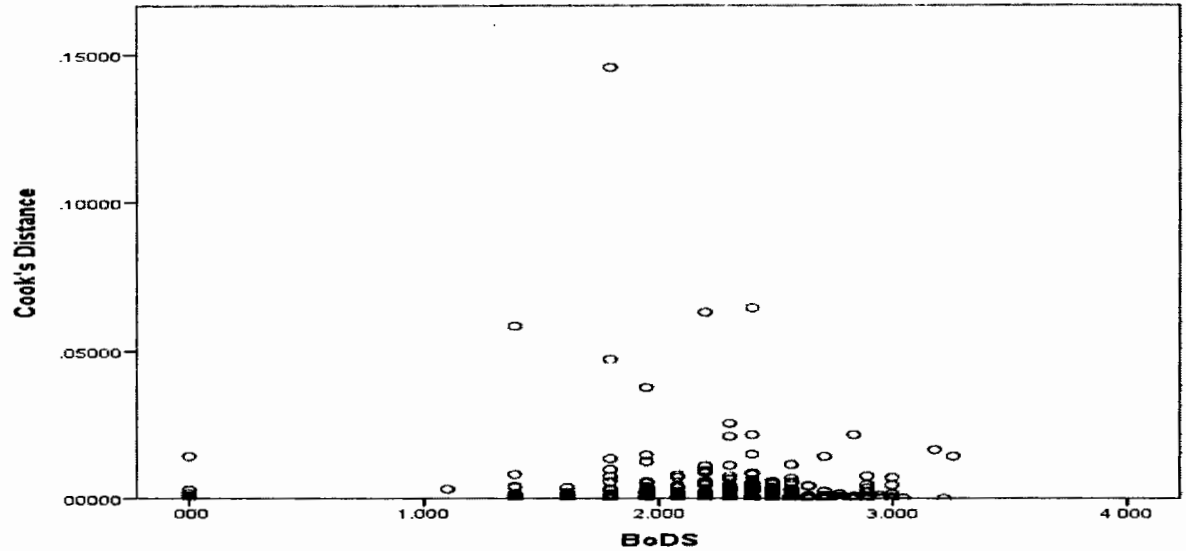


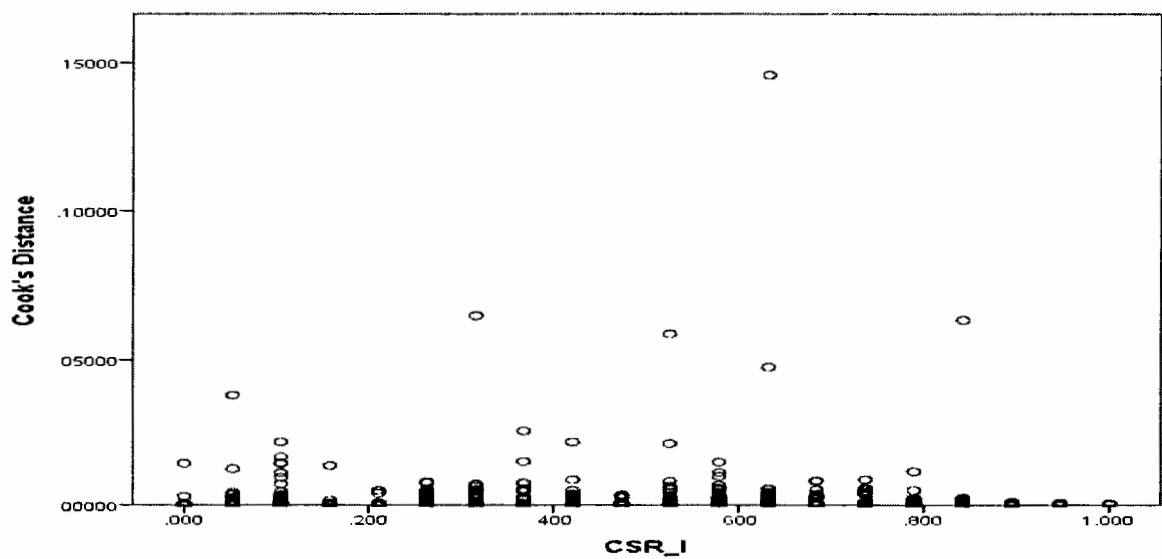
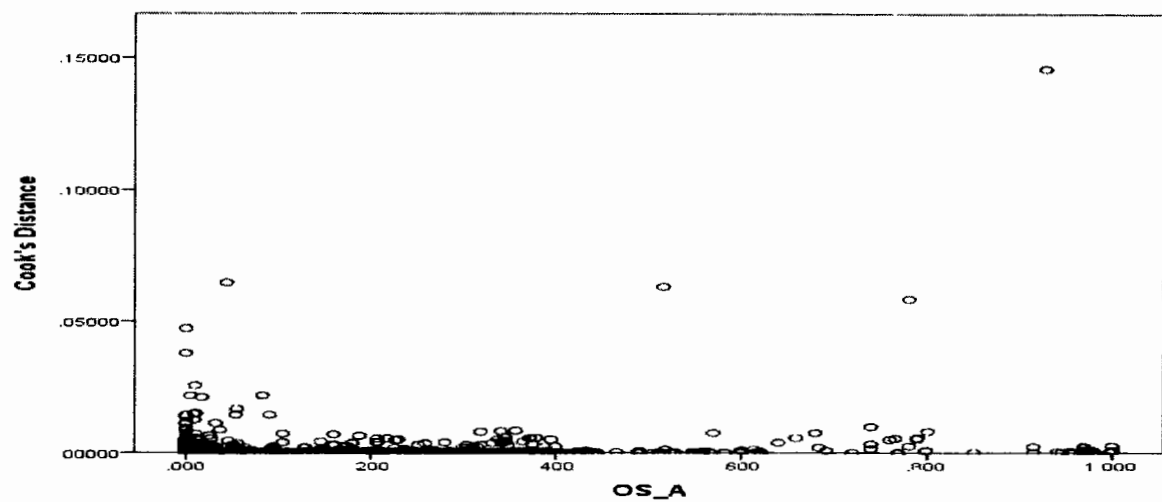
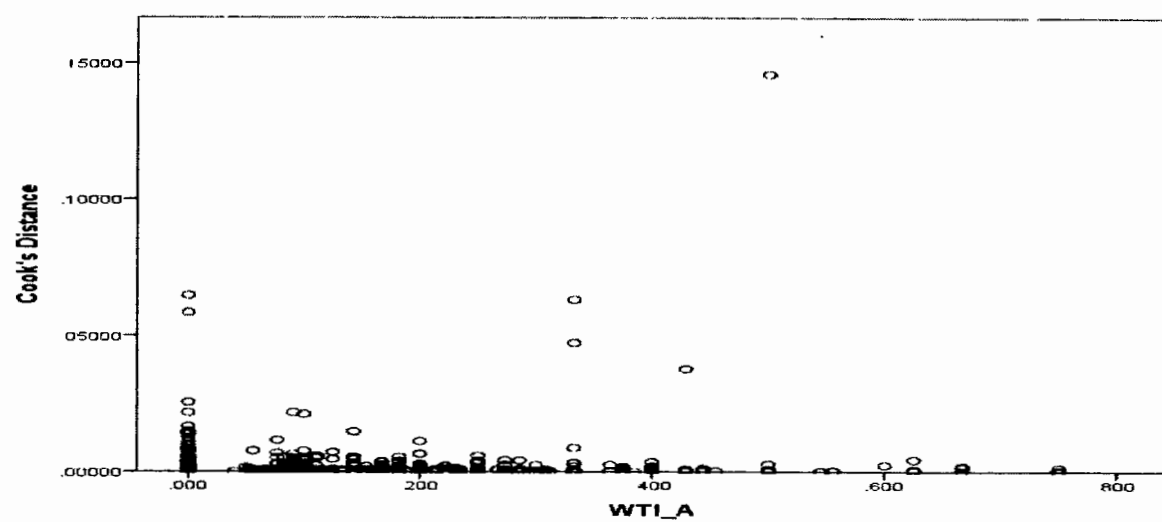
### Graphs-3 (b). Applying Cook Distance(After Eliminating Outliers) on 175 Sampled Banks

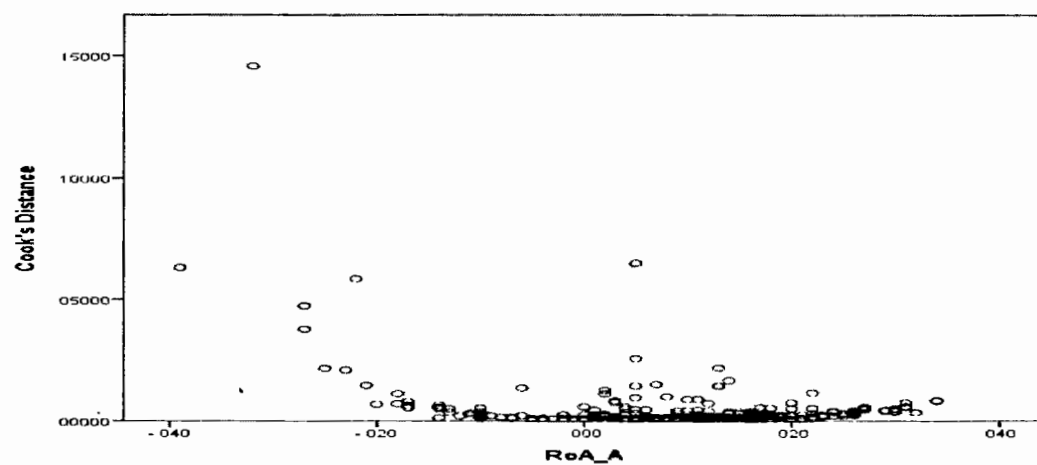
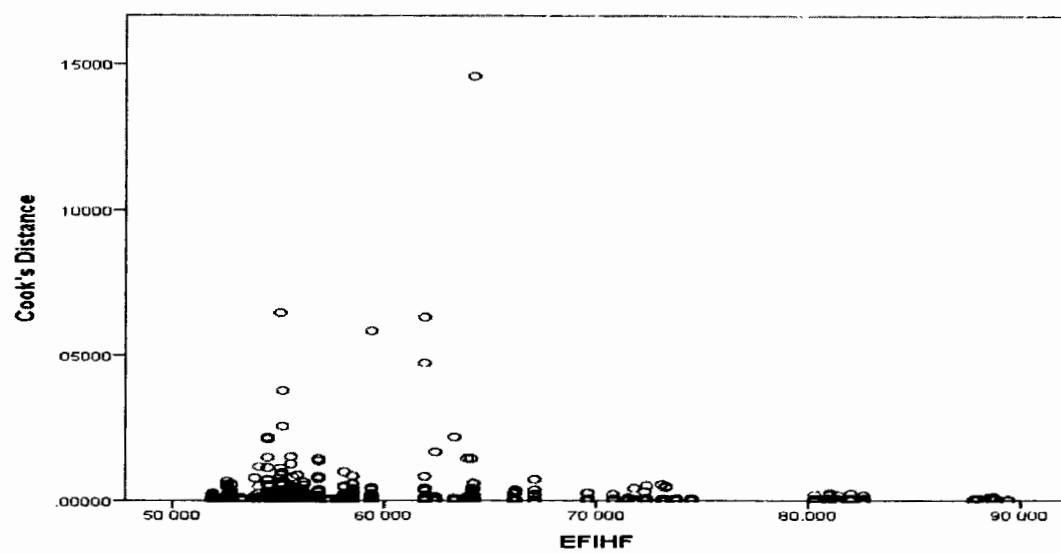
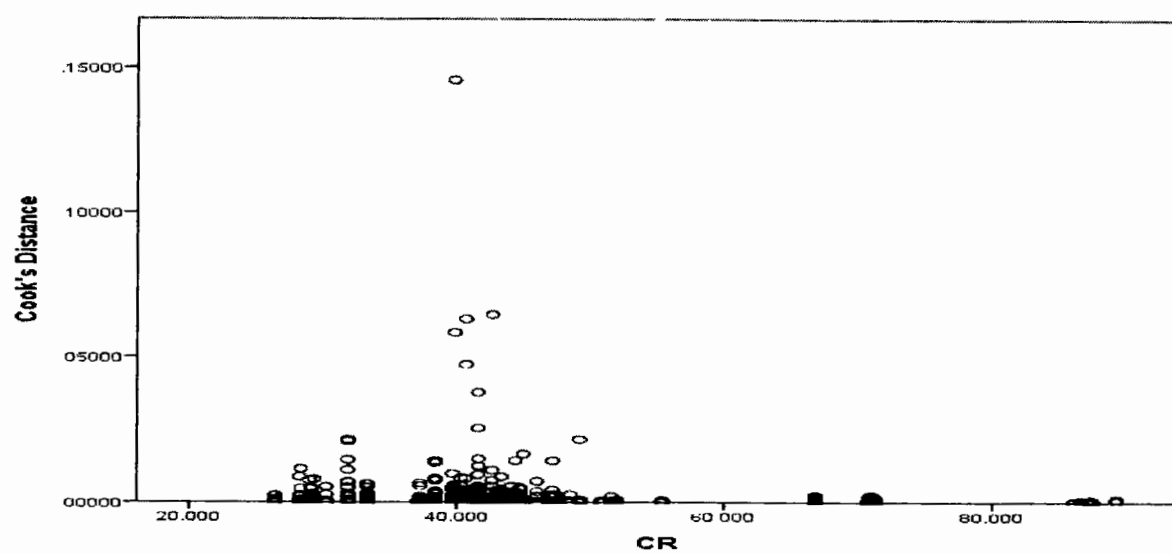
The graphical depiction of cook distance on samples of 175 commercial banks after eliminating outliers from a dataset of ten countries of the Asia-Pacific region is as under;











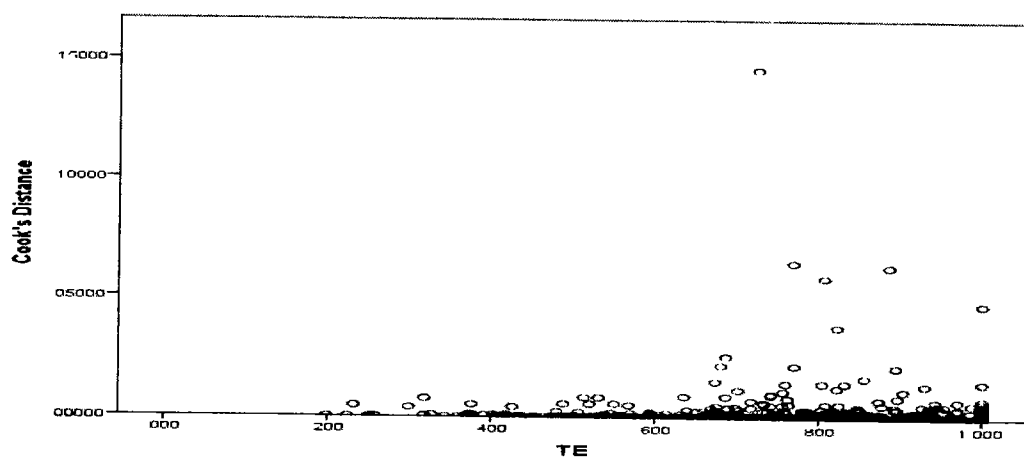




Table-11 (a). Hypothesis Summary Analysis of the Results of Static Panel Estimation Technique

TECHNIQUES USED ANALYSIS USED	STATIC PANEL ESTIMATION TECHNIQUES (FIXED-EFFECT MODEL)										
	(Step by Step Multiple Regression Model)										
MODELS USED	1	2	3	4	5	6	7	8	9	10	11
<b>Bank-Specific Factors</b>											
There is a significant relationship of NPL with TE	Significant and Positive						Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of NPL with ROA	Significant and negative						Significant and negative	Significant and negative	Significant and negative	Significant and negative	Significant and negative
There is a significant relationship of liquidity (deposits) with TE	Significant and negative						Significant and negative	Significant and negative	Significant and negative	Significant and negative	Significant and negative
There is a significant relationship of liquidity (deposits) with ROA							Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of liquidity (loans) with TE	Significant and Positive						Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of liquidity (loans) with ROA							Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of CAR with TE							Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of CAR with ROA	Significant and Positive						Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of bank size with TE							Significant and negative	Significant and negative	Significant and negative	Significant and negative	Significant and negative
There is a significant relationship of bank size with ROA	Significant and						Significant and	Significant and	Significant and	Significant and	Significant and

negative

**Corporate Governance Factors**

There is a significant relationship of board size with TE

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of board size with ROA

There is a significant relationship of CEO duality with TE

There is a significant relationship of CEO duality with ROA

significant and negative

significant and negative

There is a significant relationship of CEO Women with TE

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of CEO Women with ROA

negative

negative

There is a significant relationship of the Percentage of Women on board with TE

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of the Percentage of Women on board with ROA

significant and negative

Significant and Positive

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of ownership structure with TE

significant and negative

significant and negative

significant and negative

significant and negative

significant and negative

There is a significant relationship of the CSR disclosure Index with TE

**Environmental Factors**

significant and negative

significant and negative

significant and negative

significant and negative

There is a significant relationship of the CSR disclosure Index with ROA	significant and negative	significant and negative	significant and negative	significant and negative	significant and negative
<b>Market Structure Factors</b>					
There is a significant relationship of concentration ratio with TE					
There is a significant relationship of concentration ratio with ROA			significant and positive	significant and positive	significant and positive
<b>Institutional Factors</b>					
There is a significant relationship of EFIHF with TE					
There is a significant relationship of EFIHF with ROA					
There is a significant relationship of GCI with TE					
There is a significant relationship of GCI with ROA			significant and negative		

Table-11 (b). Hypothesis Summary Analysis of the Results of Quantile Regression

TECHNIQUES USED ANALYSIS USED	QUANTILE REGRESSION (Step by Step Multiple Regression Model)										
	1	2	3	4	5	6	7	8	9	10	11
<b>Bank-Specific Factors</b>											
There is a significant relationship of NPL with TE											
There is a significant relationship of NPL with ROA	Significant and Positive						significant and negative	significant and negative	significant and negative	significant and negative	significant and negative
There is a significant relationship of liquidity (deposits) with TE									significant and negative		
There is a significant relationship of liquidity (deposits) with ROA									significant and negative	significant and positive	significant and positive
There is a significant relationship of liquidity (loans) with TE											
There is a significant relationship of liquidity (loans) with ROA	significant and positive						significant and positive significant and negative	significant and positive significant and negative	significant and positive	significant and positive	significant and positive
There is a significant relationship of CAR with TE											
There is a significant relationship of CAR with ROA	significant and positive						significant and positive	significant and positive	significant and positive	significant and positive	significant and positive
There is a significant relationship of bank size with TE											
There is a significant relationship of bank size with ROA	significant and positive						significant and positive	significant and positive	significant and positive	significant and positive	significant and positive



There is a significant relationship of the CSR disclosure Index with ROA

significant and positive

Significant and Positive  
Significant and Positive  
Significant and Positive

#### Market Structure Factors

There is a significant relationship of concentration ratio with TE

significant and negative  
Significant and Positive

There is a significant relationship of concentration ratio with ROA

significant and positive

Significant and Positive  
Significant and Positive  
Significant and Positive

#### Institutional Factors

There is a significant relationship of EFIHF with TE

significant and negative  
Significant and Positive

There is a significant relationship of EFIHF with ROA

significant and negative  
Significant and Positive

There is a significant relationship of GCI with TE

significant and negative

significant and negative

There is a significant relationship of GCI with ROA

Table-11 (c). Hypothesis Summary Analysis of the Results of Dynamic Panel Estimation Technique

TECHNIQUES USED ANALYSIS USED MODELS USED	DYNAMIC PANEL ESTIMATION TECHNIQUE (GMM)				
	(Step by Step Multiple Regression Model)				
	7	8	9	10	11
<b>Bank-Specific Factors</b>					
There is a significant relationship of NPL with TE	Significant and positive	Significant and positive	Significant and positive	Significant and positive	Significant and positive
There is a significant relationship of NPL with ROA	significant and negative	significant and negative	significant and negative	significant and negative	significant and negative
There is a significant relationship of liquidity (deposits) with TE	significant and negative	significant and negative	significant and negative		
There is a significant relationship of liquidity (deposits) with ROA	significant and positive		significant and positive	significant and positive	significant and positive
There is a significant relationship of liquidity (loans) with TE	significant and positive				significant and positive
There is a significant relationship of liquidity (loans) with ROA	significant and positive	significant and positive	significant and positive	significant and positive	significant and positive
There is a significant relationship of CAR with TE					
There is a significant relationship of CAR with ROA	significant and positive	significant and positive	significant and positive	significant and positive	significant and positive
There is a significant relationship of bank size with TE					
There is a significant relationship of bank size with ROA		significant and negative	significant and negative	significant and negative	significant and negative
<b>Corporate Governance Factors</b>					
There is a significant relationship of board size with TE	Significant and Positive	Significant and Positive	Significant and Positive	Significant and Positive	Significant and Positive

There is a significant relationship of board size with ROA

There is a significant relationship of CEO duality with TE

There is a significant relationship of CEO duality with ROA

significant and negative

There is a significant relationship of CEO Women with TE

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of CEO Women with ROA

significant and negative

significant and negative

significant and negative

There is a significant relationship of the Percentage of Women on board with TE

Significant and Positive

Significant and Positive

Significant and Positive

There is a significant relationship of the Percentage of Women on board with ROA

significant and negative

Significant and Positive

Significant and Positive

There is a significant relationship of ownership structure with TE

significant and negative

Significant and Positive

significant and negative

There is a significant relationship of ownership structure with ROA

significant and negative

significant and negative

significant and negative

#### Environmental Factors

There is a significant relationship of the CSR disclosure Index with TE

significant and negative

significant and negative

significant and negative

There is a significant relationship of the CSR disclosure Index with ROA

significant and negative

significant and negative

significant and negative

#### Market Structure Factors

There is a significant relationship of concentration ratio with TE

significant and negative

significant and negative

significant and negative

There is a significant relationship of concentration ratio with ROA

significant and negative

significant and negative

significant and positive

#### Institutional Factors



There is a significant relationship of EFIHF with TE

There is a significant relationship of EFIHF with ROA

There is a significant relationship of GCI with TE

There is a significant relationship of GCI with ROA

significant and  
negative

### **Annex-I. Development of CSR disclosure Index (Checklist)**

The **voluntary CSR Disclosure Index** was developed by studying several articles, sustainability reports of banks, national policies/guidelines issued by each country, and international commitments such as Global Reporting Initiative, Equator Principles, UN Sustainable Development Goals (UN SDGs), UN Global Compact (UN GC), and UN Environment Program Finance Initiative (UNEPFI). CSR is based on three pillars: the ESG model, i.e., environmental, social, and governance.

#### **Summary of items included in CSR disclosure Index**

<b>.CSR Dimensions</b>	<b>Score</b>	<b>Content</b>
General Information Disclosure	06	CSR Reporting, CSR Policy, CSR committee, Stakeholders Engagement, National Policies on CSR, Accreditation of international organizations
Social Aspects	07	Philanthropic Activities, Donations, Code of Conduct and Ethics, AML/KYC Policy, Grievance Redressal Policy for employees and customers, Employees well being, Customer Privacy Policy
Environmental	06	In-House Environmental System (Use of Natural Resources, Digitalization, Emissions); External Environmental System (Incorporation of Environmental Risk before lending, Environmental Risk Rating, Green Financing)
Governance	06	Board Size, CEO duality, Gender Diversity (presence of women on board, CEO Women, Tokenism/Key Influencers), Ownership Structure

#### **CSR Checklist (ESG Model)**

If banks disclose dimensions of CSR in their annual reports or websites, they will be scored one (1) and otherwise assigned zero (0).

#### **Governance Perspective**

##### **CSR Management Related**

- i. CSR reporting/Sustainability reporting
- ii. CSR/Sustainable/Green banking Committee Composition
- iii. Stakeholders' engagement to formulate the policy of CSR
- iv. Do the banks disclose national corporate social responsibility policies in annual/sustainable reports?
- v. Does the bank CSR policy conform to any international standards/commitments such as accreditation/signatory of GRI, Equator Principle, CDP, UNEP FI, UN GC, UN PRI, UN SDGs, ISO 26000, ISO 14000, ISO 27001-Information Security related certification, World Wildlife Fund, Certification in Energy and Environmental Design (LEED), etc.?

**Ethical Standards:**

- i- Code of Conduct and Ethics covers anti-corruption and anti-bribe policy, whistleblower policy, gifts, entertainment policy, cyber security policy/fraud, customers' data protection policy, etc.
- ii- AML/CFT policy and Know Your Customer Policy
- iii- Grievance redressal policy/complaints handling policy for employees and customers

**Managers**

- a. Board of directors (names, qualifications, and position)
- b. Board Structure: It includes a board of directors (size, CEO duality, meetings)
- c. Gender Diversity includes the presence of women on board, CEO women, tokenism/key influencers, level of involvement in other committees
- d. Ownership structure includes # of shares owned by foreign shareholders to the total number of shares or assigns "1" for government/public and 0 otherwise

**Shareholder/Investor information**

Disclose information related to.....

- i. Common forum for dialogue
- ii. Information disclosure for shareholders such as share price, market capitalization, dividend per share, earnings per share, P/E ratio, BV/share

**Social Perspective****Employee well-being includes**

- i. Training and education policy-Investing in developing our people
- ii. Employees' benefits and remuneration/reward policy
- iii. Employees' health and safety policy
- iv. Employees recruitment and career development policy

**Customer well-being includes**

- i. Customer confidentiality and privacy policy
- ii. Service Delivery Policy
- iii. Product information management system
- iv. Guarantee for the protection of customer deposits

**Communities and Societies**

- a. CSR activities such as
  - i. Health and education.
  - ii. Vocational and skill training
  - iii. Internships/scholarships
  - iv. Poverty reduction and rehabilitation
  - v. Arts, culture, and sports
  - vi. Youth loans and women entrepreneur
  - vii. Infrastructure development
  - viii. Energy management such as water resource development, energy conservation, and energy-saving measures
  - ix. Contribution to national causes
  - x. Disaster management
- b. Prescribed CSR expenditure/Charity/Donations (amount mentioned in annual reports)

### **Environmental Perspective**

1. In-House Environmental Management System comprises the use of natural resources (energy management, waste management, and water management), digitalization in offices such as paperless banking (e-communication, mobile banking, SMS banking, e-statement, sending soft copies of statements through email, process documents electronically, installation of online MIS software for data collection, analysis, and management reporting, double side printing of papers, scrap papers are utilized as notepads, E - Fund Transfer, digital attendance, ATM, e-recruitment, E-Tender, ATM, Debit / Credit Card, Internet Banking, pay our bills online, SMS Banking, Bio-Metric Smart Card, Cash Back service, customer can view their Account statement, Loan Summary information, Term deposit view, loan schedule view, etc.).
2. Incorporation of environmental risk before lending advances
3. The external environmental system comprises Sustainable and Green Financing (weighting up environmental risks of the project before making financing decisions)
  - i. Lending/Disbursements under Green Financing to which sectors\_\_\_\_\_ at what amount\_\_\_\_\_ (sectors such as energy efficiency (LED Light Bulb Replacement Project), renewable energy (solar /wind /hydro/biomass/biogas power plants), sustainable transportation (Subway construction), water quality and conservation, solid waste management, liquid waste management, recycling, forestry, non-fire block brick, Solar Panel Financing Solutions, safe drinking water under water usages, organic farming, biodiversity, green building, installation of ETP (Effluent Treatment Plant), Bio-fertilizer Plant, Green IT, inaugural of the green bond, etc.)

## **Annex-II. Legal, Regulatory and Supervisory frameworks of the ten countries of the Asia-Pacific Region**

To protect the interests of the various stakeholders, the governments of Asia-Pacific countries and international organizations made and issued various legal, regulatory, supervisory frameworks, international standards, and principles to guide the financial institutions on how to align their objectives/strategies with government inclusive development agenda, United Nations Sustainable Development Goals and with stakeholders interests. These legislations/frameworks/standards help policy-makers overcome agency problems, unaligned goals due to imperfect information, conflict of interest among stakeholders, disclosure protocols, etc.

The Parliament makes the countries' legal frameworks, and it provides a basis for how financial institutions perform their functions within and outside the country. It consists of acts and ordinances that guide the financial institutions to frame rules and regulations. Secondly, the regulatory frameworks are issued by regulatory authorities of every country, such as central banks and securities and exchange commissions. It consists of rules, regulations, policies, procedures, standards, guidelines, and processes under which the financial institutions are working in the country. These prudential regulations provide the guidelines/policies related to governance, risk management, code of conduct, sustainable and green financing, agro-financing, consumer financing, micro-financing, anti-money laundering and counter-terrorism (AML/CFT), CSR disclosure guidelines, quotas for female participation in the board or other committees, capitalization, deposits and lending policy (BASEL Accord), disclosure policy, etc. Thirdly, the central bank issued supervisory frameworks to monitor all the commercial banks in the country. The main tools used to monitor the activities of the banks are CAMELS (capital adequacy, asset quality, management ratio, earning, liquidity and size), CAELs (capital adequacy, asset quality, earnings, liquidity, size), ESG (Environment, social and governance), EES (Economic, Environmental and Social) rating systems. The essential guidelines/policies issued by regulatory authorities of the countries will be presented:

## Annex-II. Legal, Regulatory, and Supervisory Framework in the Sampled Countries of the Asia-Pacific Region

Description	Pakistan	Bangladesh	India	Indonesia	Malaysia
Legal	State Bank of Pakistan Act, 1956; SBP Ordinance 2001; Banking Companies Ordinance, 1962; Foreign Exchange Regulation Act, 1947 Microfinance Institutions Ordinance, 2001 Payment Systems and Electronic Fund Transfer Act, 2007; Companies Ordinance 1984, Companies (Amendment) Act 2015, Companies Act 2017	Bangladesh Bank Order, 1972, Bank Company Act, 1991; Bank Company (Amendment) Act, 2013 Foreign Exchange Regulations Act, 1947 and Amendment Act (2015) Financial Institutions Act, 1993; Financial Reporting Act, 2015; Micro Credit Regulatory Authority Act, 2006 The Companies Act 1913 (as amended in 1994); Anti-Terrorism Act, 2009 and Anti-terrorism (Amendment) Act 2013; Money Laundering Prevention Act, 2012 and Money Laundering Prevention (Amendment) Act, 2015	Reserve Bank of India Act, 1934; Banking Regulations Act, 1949; State Bank of India Act, 1955 Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970 and 1980 Foreign Exchange Management Act, 1999 Credit Information Companies (Regulations) Act, 2005 Payment and Settlement Systems Act 2007 and amended up to 2015 Competition Act, 2002 Companies Act, 1956/Companies Act, 2013; The Prevention of Money-Laundering Act, 2002 and Unlawful Activities Prevention (Amendment) Act in 2004	Republic of Indonesia Law No. 23 of 1999 concerning Bank Indonesia as amended by Law No. 2 of 2008; Law No. 6 of 2009;	Central Bank of Malaysia Act 2009 Financial Services Act 2013 Islamic Financial Services Act 2013 Development Financial Institutions Act 2002 Financial Services (Financial Ombudsman Scheme) Regulations 2015 AML and Anti-Terrorism Financing Act 2001
Regulatory	Code of Corporate Governance 2012; Public Sector Companies (Corporate Governance) Rules, 2013; Code of Corporate Governance Regulations, 2017; Public Sector Companies (Corporate Governance	Voluntary Code of Corporate Governance for Bangladesh 2004; Corporate Governance Guidelines (CGG) in 2006; revised in 2012; 2013; 2018	The Prevention of Money-Laundering (Maintenance of Records) Rules, 2005 Accounting standards issued by the Institute of Chartered Accountants of India established under	Law No. 15 of 2002 concerning Criminal Acts of Money Laundering as amended by Law No. 25 of 2003 Bank Indonesia Regulation	Malaysian Code on Corporate Governance, 2000; revised in 2007; 2012; and in 2017 New Malaysian Code on Corporate Governance issued by Securities

	<p>Compliance) Guidelines 2018; Listed Companies (Code of Corporate Governance) Regulations, 2019</p> <p>ICAP issues accounting standards</p> <p>Guidelines on AML/CFT Regulations 2018 issued by SECP; AML and CFT regulations for banks and DFIs issued by SBP 2018;</p> <p>Basel Accord for asset-liability management structure</p> <p>CAMELS, CAELS, EES, ESG, PESTEL Analysis</p>	<p>ICAB issues accounting standards</p> <p>Basel Accord for asset-liability management structure</p>	<p>Chartered Accountants Act, 1949</p> <p>Companies Rules, 2014</p>	<p>Number 14/27/PBI/2012 Concerning Implementation of Anti Money Laundering and Combating the Financing of Terrorism Program for Commercial Bank</p> <p>The disclosure standard-setting body is the Financial Accounting Standard Board under the Indonesian Institute of Accountants.</p>	<p>Commission Malaysia</p> <p>AML-CFT and Targeted Financial Sanctions for Financial Institutions in 2019</p> <p>Financial Reporting 2013 and 2019</p>
Supervisory					

Description	Singapore	Thailand	China	Australia	Japan
Legal	<p>Monetary Authority of Singapore Act 1971 and (Amendment) Act 2003 and 2017</p> <p>Banking Act 1970; Banking (Amendment) Act 1983, 1984, 1993, 1996, 1998, 2001, 2007, 2016</p> <p>Financial Institutions (Miscellaneous Amendments) Act 2013</p> <p>Securities and Futures (Amendment) Act 2017</p> <p>Payment and Settlement Systems Act 2002</p> <p>Companies (Amendment) Act 2004 and (Amendment) Act 2005</p> <p>Personal Data Protection Act 2012</p>	<p>Bank of Thailand Act 1942</p> <p>Financial Institution Business Act 2008</p>	<p>People Banks of China, China Banking Regulatory Commission (CBRC);</p> <p>China Insurance Regulatory Commission (CIRC) and China Securities Regulatory Commission.</p> <p>Later on, in 2018, both CBRC and CIRC merged into one regulator known as China Banking Insurance Regulatory Commission (CBIRC).</p>	<p>Reserve Bank Act 1959; Payment Systems Act 1998 and Payment Systems and Netting Act 1998</p> <p>Australian Prudential Regulation Authority (APRA) Act 1998; APRA Regulations 2018; Public Governance, Performance and Accountability Act 2013; Financial Institutions Supervision Levies Collection Act 1998</p> <p>Banking Act 1959, Banking Regulations 2016; Financial Sector (Shareholdings) Act 1998; Financial Sector (Collection of Data) Act 2001 and Financial Sector (Collection of Data) regulations 2008,</p> <p>Financial Transaction Reports Act 1988 (FTR Act)</p> <p>Anti-Money Laundering and Counter-Terrorism Financing Act 2006</p>	<p>Bank of Japan Act 1882, 1942, 1997, 2007</p>



	and amended up to 2018				
Regulatory			Principles of Good Corporate Governance for Listed Companies 2012 issued by the stock exchange of Thailand	The Banking (Corporate Governance) Regulations 2005, Code of Corporate Governance 2018, and the Guidelines on Corporate Governance for Financial Holding Companies, Banks, Direct Insurers, Reinsurers, and Captive Insurers were issued in April 2013 by the Monetary Authority of Singapore	
				Monetary Authority of Singapore (Sanctions and Freezing of Assets of Persons — Democratic People's Republic of Korea) Regulations 2016	

### **Annex-III (a). International Commitments regarding CSR**

International bodies also issued different standards/ principles for banks to guide banking sectors on aligning their objectives/strategies with stakeholder interests. How do involve stakeholders to determine the key materiality issues regarding CSR? How to create value for several stakeholders? A few prominent international standards or principles or commitments are briefly discussed below:

#### **United Nations Environment Program Finance Initiative (UNEP FI) 1992**

The initiative was launched in 1992 and **applied to** various financial institutions. It addresses social, environmental, and governance-related issues. It links the international finance principles with sustainability in financial markets. The main principles framed by UNEP FI in collaboration with the UN Global compact include;

- 2006 Principles for Responsible Investment (PRI): It exhibits credit to those investors by considering the environmental, social, and governance (ESG) factors. Environmental issues include energy management, pollution control, waste management, climate change, etc. Social issues include poverty alleviation, equal human rights, working conditions, etc. Governance includes anti-bribe and anti-corruption policy, anti-money laundering, gender diversity in executive pay, etc.
- 2012 Principles for Sustainable Insurance (PSI)
- 2019 Principles for Responsible Banking (PRB)

These frameworks were developed to meet the 2030 agenda for UN SDGs and Paris Agreement on Climate Change in 2015.

#### **Global Reporting Initiatives (GRI, 1997 by UNEP)**

It is an international organization that started sustainability reporting in 1997. It helps investors, regulators, governments, and other organizations on significant environmental, human rights, governance, and philanthropic/community-related. GRI has a global strategic partnership with OECD, UNEP FI, UN GC, ISO 26000, CDP, IFC, and UNCTAD. It consists of universal and specific standards encompassing EES factors (Economic, environmental and social), general disclosures, and management approach.

#### **The UN Global Compact (2000)**

It comprises ten principles that address the issues related to human rights, labour rights, environmental issues, and anti-bribe/anti-corruption policy.

### **Carbon Disclosure Project (2000)**

This **disclosure** was launched by UK based organization in 2000. It enforces firms to show the information related to greenhouse gas emissions (GHG) and determine the possible risk faced to the environment. These are the voluntary disclosures for firms to get credit from the banks. It includes climate change, water, and forests.

### **The Equator Principles (2003)**

The International Finance Corporation launched these principles in 2003 in Washington. It consists of the ten principles that address the environmental issues, social, governance, stakeholder engagement, complaint handling mechanism, monitoring and reporting mechanism, accountability and transparency, etc. These principles are applied to all industries.

### **UN Sustainable Development Goals (2015)**

UN Sustainable Development Goals (UN SDGs) are universal goals applicable to all countries for resolving economic, environmental, social, and governance issues. In the UN General Assembly meeting in September 2015 to implement UN SDGs goals by all countries in 2030.

The 17 UN SDGs goal is as under:

- SDG 1: No poverty
- SDG 2: Zero Hunger
- SDG 3: Good Health and Well-being
- SDG 4: Quality Education
- SDG 5: Gender Equality
- SDG 6: Clean Water and Sanitation
- SDG 7: Affordable and Clean Energy
- SDG 8: Decent Work and Economic Growth
- SDG 9: Industry, Innovation, and Infrastructure
- SDG 10: Reduced Inequality
- SDG 11: Sustainable Cities and Communities
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action
- SDG 14: Life Below Water
- SDG 15: Life on Land
- SDG 16: Peace, Justice, and Strong Institutions
- SDG 17: Partnerships for the Goals

**ISO 26000**

It consists of seven principles that address the issues related to transparency, accountability, ethical standards, stakeholders engagement, the rule of law, human rights, etc.

**ISO 14000**

It deals with the environmental management system (EMS). It assists the firms in reducing their operations, adversely affecting the environment, and adhering to environmental rules and regulations. It provides the basis for the development of EMS based on the Plan-Do-Check-Act (PDCA) cycle.

**Annex-III (b).National Policies regarding Sustainable Finance in Asia-Pacific Region**

These guidelines are issued by regulatory authorities of the banks of sampled countries of the Asia-Pacific region.

<b>Bangladesh</b>
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- |         |   |
|---------|---|
| 2008    | Circular on 'Mainstreaming Corporate Social Responsibility in Banks and Financial Institutions in Bangladesh' |
| 2011/13 | 'Policy Guidelines for Green Banking' and 'Guidelines on Environmental Risk Management                        |
| 2014    | Guideline for CSR expenditure allocation  |
| 2015    | Mandatory Green Finance Credit Targets I  |
| 2016    | 'Integrated Risk Management Guidelines for Financial Institutions'  |
| 2017    | Guidelines on Environmental and Social Risk Management for Banks and Financial Institutions                   |

<b>India</b>
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- |      |   |
|------|---|
| 2007 | Corporate Social Responsibility, Sustainable Development, and Non-Financial Reporting – Role of Banks |
| 2011 | National Voluntary Guidelines on Social, Environmental, and Economic Responsibilities of Business     |
| 2012 | Annual Business Responsibility Reporting  |
| 2014 | Companies (CSR Policy) Rules issued by the Ministry of Corporate Affairs                              |
| 2015 | National Voluntary Guidelines for Responsible Financing   |
| 2016 | Guidelines for the Issuance and Listing of Green Bonds  |
| 2017 | Disclosure Requirements for Issuance and Listing of Green Bonds                                       |

<b>Pakistan</b>
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- |      |  |
|------|--|
| 2009 | CSR disclosure as issued by SECP (General order)   |
| 2013 | SECP issued CSR voluntary guidelines in light of section 506 B of companies' ordinance 1984  |
| 2017 | Green Banking Policy issued by SBP on 09.10.2017 encompasses three areas such as (i) ERM guidelines (section 3), (ii) Guidelines for Green Business facilitation (section 4); (iii) Guidelines on own impact reduction (section 5) |

- 2018 SECP made amendments to the code of Corporate Governance regulations 2017 on 05.12.2018 regarding the disclosure of CSR

<b>Indonesia</b>
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- 1970 Law No. 1 concerning Work Safety
- 1999 Law No. 8 concerning Consumer Protection
- 2009 RI Law No. 32 regarding Environmental Protection and Management
- 2012 Regulation No. 14/15/PBI/2012 on Assessment of Commercial Banks assets quality which drives the National banking to consider the environment feasibility factor in business prospect assessment
- 2013 Regulation Number 1/POJK.07/2013 on Consumer Protection in Financial Services Sector
- 2013 Credit Manual on Commercial Credit and Consumer that stipulates that investors cultivate the land for housing and residential areas with an area of twenty-five hectares or more must have an environmental impact analysis
- 2014 Roadmap for Sustainable Finance in Indonesia
- 2017 Framework and regulation for green bond and Regulation on the Application of Sustainable Finance for Financial Services Companies

<b>People's Republic of China</b>
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- 1995 Credit policy for environmental protection
- 2007/08 Green Credit Policy, Green Insurance Policy, and Green Securities Policy
- 2009 Guidelines on Corporate Social Responsibility
- 2012 Green Credit Guidelines
- 2014 Green Credit Monitoring & Evaluation mechanism and Key Performance Indicators Checklist
- 2016 Guidelines for Establishing the Green Financial System and Green Bond Guidelines such as ChinaBond Green and Climate-Aligned Bond Index
- 2018 Mandatory ESG disclosures for listed companies and bond issuers by 2020

<b>Thailand</b>
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- 2006 SEC appointed a working group to promote environmental and social responsibility of the company
- 2008 Guidelines for Sustainability Reporting
- 2012 Establishment of CSR Guidelines and Sustainability Reporting Guidelines
- 2014 CSR Reporting Requirements and Sustainability Development Roadmap for Listed Companies

<b>Malaysia</b>
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- 1965 The Companies Act
- 2010 Personal data protection Act and whistleblower policy
- 2010 Compliance with GRI standards in managing the economic, environmental and social (EES)
- 2013 Financial Services Act and Islamic Financial Services Act
- 2014 Finance sustainable and responsible investment initiatives
- 2016 The Companies Act

<b>Singapore</b>
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- 2010 Guide to Sustainability Reporting for Listed Companies
- 2015 Guidelines on Responsible Financing
- 2017 Green Bond Grant Scheme

<b>Japan</b>
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- 2012 Principles for financial action towards a sustainable society
- 2014 Japan Stewardship Code
- 2015 Corporate Governance Code and Infrastructure Fund Market
- 2017 Green Bond Guidelines

**Annex--IV. List the Names of Regulatory Authorities of the Sampled Countries of the Asia-Pacific Region**

<b>Country Name</b>	<b>Central Bank</b>	<b>Banking Prudential Regulators</b>
Pakistan	State Bank of Pakistan	State Bank of Pakistan
Bangladesh	Bangladesh Bank	Bangladesh Bank
India	Reserve Bank of India	Reserve Bank of India
Indonesia	Bank Indonesia	Bank Indonesia
China	Peoples Bank of China	China Banking Regulatory Commission
Malaysia	Bank Negara Malaysia	Bank Negara Malaysia
Thailand	Bank of Thailand	Bank of Thailand
Australia	Reserve Bank of Australia	Australian Prudential Regulations Authority
Japan	Bank of Japan	Financial Services Authority
Singapore	Monetary Authority of Singapore	Monetary Authority of Singapore



### Annex-V.Trend Analysis of the Ten Countries of the Asia-Pacific Region

The tables and graphs of the trend analysis of ten countries of Asia-Pacific covering six years from the period 2013 to 2018 with respect to demographic factors (population density), macro-economic factors (GDP growth rate, inflation rate, unemployment, public debt as a percentage of GDP), financial sector development (banking sector development and stock market development as a percentage of GDP), Economic, Political, and Governance Structures (economic freedom index, global competitiveness index, worldwide governance indicators ) are given below;

### Annex-V.Trend Analysis of the Ten Countries of the Asia-Pacific Region

	Countries	Demographic and Macro-Economic Structure						Financial Sector Development					Economic, Political, Institutional, Technological, and Governance Structures										
		Years	Population (Millions)	PDensity	GDP growth rate	Inflation	Unemp	PDebt	FDCP	FDLL	FDA	SMD	EFHF	BRS_I	EES_I	ISS_I	GC_I	V/A	PS	GE	GR	GL	GC
	Pakistan	2013	191 263	248.1	3.7	7.3	5.6	60.1	49.5	39 066	36 883	24.8	55 100	3.4	3.7	3.5	3.5	-0.799	-2 603	-0.792	-0.700	-0.857	-0.956
	Pakistan	2014	195 307	253.4	4.1	8.6	7.7	62.1	47.5	39 327	37 044	30.1	55 200	3.3	3.6	3.5	3.4	-0.716	-2 401	-0.755	-0.683	-0.760	-0.834
	Pakistan	2015	199 427	258.7	4.1	4.5	5.2	63.1	48.8	39 767	39 899	24.4	55 600	3.3	3.6	3.5	3.4	-0.722	-2 483	-0.668	-0.627	-0.767	-0.811
	Pakistan	2016	203 627	264.1	4.5	2.9	5.2	64.2	52.4	42 970	43 184	33	55 900	3.4	3.6	3.4	3.4	-0.701	-2 483	-0.653	-0.640	-0.804	-0.875
	Pakistan	2017	207 897	269.7	5.3	4.2	5.4	64.4	53.9	44 070	44 577	28.08	52 800	3.5	3.5	3.5	3.5	-0.695	-2 406	-0.598	-0.593	-0.724	-0.778
	Pakistan	2018	212 215	275.3	5.6	4.5	5.9	66.9	57.9	41 040	40 318	28.08	54 400	3.7	3.7	3.6	3.7	-0.801	-2 267	-0.634	-0.644	-0.673	-0.791
	Bangladesh	2013	152 765	1173.6	6	6.8	5	42.9	57.9	53 795	52 377	31.5	52 600	3.7	3.6	3	3.6	-0.405	-1 628	-0.794	-0.915	-0.867	-0.887
	Bangladesh	2014	154 520	1187.1	6.1	7.3	5	31.7	60	55 281	54 647	31.5	54 100	3.8	3.6	3	3.7	-0.474	-0 896	-0.766	-0.938	-0.778	-0.887
	Bangladesh	2015	156 256	1200.4	6.6	6.4	4.3	39.7	60.2	56 127	55 705	31.5	53 900	3.8	3.6	3	3.7	-0.512	-1 212	-0.724	-0.899	-0.751	-0.808
	Bangladesh	2016	157 971	1213.6	7.1	5.9	4.3	33.9	61.4	56 925	55 611	31.8	53 300	3.9	3.6	3	3.8	-0.585	-1 262	-0.679	-0.797	-0.663	-0.857
	Bangladesh	2017	159 670	1226.6	7.3	5.4	4.4	34	63.7	57 772	57 369	34.5	55 000	4	3.6	3.2	3.8	-0.616	-1 256	-0.733	-0.807	-0.671	-0.832
	Bangladesh	2018	161 356	1239.6	7	6.1	4.1	33.1	64.1	55 980	55 142	28.2	55 100	4.1	3.7	3.3	3.9	-0.728	-1 032	-0.748	-0.826	-0.640	-0.905
	India	2013	1280 846	430.8	6.4	9.4	9.8	68.1	77.9	74 062	68 705	61.3	55 200	4.3	4.5	3.9	4.3	0.433	-1 229	-0.172	-0.471	-0.057	-0.517
	India	2014	1295 604	435.8	7.4	6	8.5	66.8	75.9	74 537	68 677	76.4	55 700	4.2	4.4	4	4.3	0.413	-0 998	-0.206	-0.448	-0.063	-0.428
	India	2015	1310 152	440.7	8.2	4.9	3.7	66.7	75.6	74 829	68 673	72.1	54 600	4.2	4.2	3.9	4.2	0.428	-0 948	0.090	-0.391	-0.047	-0.352

India	2016	1324.509	445.5	7.1	4.5	3.6	65	74.5	73.774	69.768	68.4	56.200	4.4	4.2	3.9	4.3	0.440	-0.954	0.075	-0.307	-0.029	-0.282
India	2017	1338.659	450.2	6.6	3.7	3.5	67.2	72.1	72.106	68.354	87.9	52.600	4.6	4.4	4.2	4.5	0.386	-0.765	0.090	-0.254	0.005	-0.240
India	2018	1352.617	454.9	7.3	4.6	3.5	69.5	71.4	73.862	68.836	76.6	54.500	4.7	4.5	4.3	4.6	0.379	-0.957	0.283	-0.184	0.026	-0.186
Indonesia	2013	251.806	139	5.6	6.4	6.6	25	42.1	33.128	34.690	38	56.900	4.7	4.2	4	4.4	0.036	-0.519	-0.199	-0.195	-0.531	-0.614
Indonesia	2014	255.129	140.8	5	6.4	6.2	24	42.4	33.011	35.830	47.4	58.500	4.9	4.3	4.1	4.5	0.154	-0.417	-0.037	-0.108	-0.342	-0.562
Indonesia	2015	258.383	142.6	4.9	6.4	6	26.1	42.4	33.304	36.944	41	58.100	4.9	4.4	4.2	4.6	0.185	-0.615	-0.241	-0.218	-0.422	-0.458
Indonesia	2016	261.554	144.4	5	3.5	6.2	25	43.1	34.013	38.045	45.7	59.400	4.8	4.3	4.1	4.5	0.167	-0.373	0.008	-0.122	-0.345	-0.399
Indonesia	2017	264.646	146.1	5.1	3.8	5.8	27.3	42.1	34.099	38.075	51.3	61.900	4.8	4.4	4.2	4.5	0.130	-0.498	0.041	-0.106	-0.346	-0.253
Indonesia	2018	267.663	147.8	5.3	3.8	5.6	27.9	42.8	33.511	36.717	46.7	64.200	5	4.5	4.3	4.7	0.180	-0.533	0.180	-0.071	-0.315	-0.252
Malaysia	2013	29.469	89.7	4.7	2.1	3.1	52.6	138.4	135.120	127.980	154.8	66.100	5.4	4.9	4.7	5.1	-0.340	0.052	1.000	0.637	0.436	0.350
Malaysia	2014	29.866	90.9	6	3.1	3	55.5	140.6	133.168	130.380	135.8	69.600	5.4	4.9	4.7	5	-0.360	0.267	1.115	0.838	0.588	0.411
Malaysia	2015	30.271	92.1	5	2.1	3.2	58.2	142.4	132.353	134.964	127.1	70.800	5.5	4.9	5	5.2	-0.391	0.259	0.949	0.753	0.502	0.235
Malaysia	2016	30.685	93.4	4.2	2.1	2	57	143	127.992	135.155	119.4	71.500	5.6	5	5.1	5.2	-0.418	0.137	0.866	0.712	0.499	0.096
Malaysia	2017	31.105	94.7	5.9	3.8	2.9	57.4	138.4	122.219	131.913	142.9	73.800	5.5	5	4.9	5.2	-0.400	0.116	0.828	0.684	0.414	0.026
Malaysia	2018	31.528	96	5.3	2.6	3.3	56.3	143.5	130.170	132.079	111	74.500	5.5	4.9	4.9	5.2	-0.084	0.237	1.075	0.682	0.623	0.314
Thailand	2013	68.144	133.4	2.7	2.2	0.7	41.7	123.1	104.225	120.494	84.3	64.100	4.9	4.4	3.7	4.5	-0.430	-1.312	0.248	0.227	-0.121	-0.344
Thailand	2014	68.439	134	1	1.9	0.5	44.3	126.5	107.432	125.420	105.7	63.300	4.9	4.4	3.8	4.5	-0.875	-0.906	0.338	0.273	-0.191	-0.450
Thailand	2015	68.714	134.5	3	-0.9	0.8	45.3	128.1	118.975	140.186	86.9	62.400	5	4.5	3.8	4.7	-0.969	-0.994	0.350	0.292	-0.148	-0.493
Thailand	2016	68.971	135	3.3	0.2	0.9	47.2	126.4	122.531	142.715	105	63.900	4.9	4.6	3.9	4.6	-1.025	-0.989	0.342	0.168	-0.005	-0.389
Thailand	2017	69.210	135.5	3.9	0.7	1.1	43.1	124.7	120.899	138.962	120.5	66.200	4.9	4.6	3.8	4.6	-1.047	-0.753	0.385	0.141	0.044	-0.386
Thailand	2018	69.428	135.9	4	1.2	0.6	42.2	123.8	114.812	133.555	99.2	67.100	5.1	4.6	3.9	4.7	-1.006	-0.733	0.350	0.112	0.023	-0.399
China	2013	1357.380	144.6	7.8	2.6	6.5	25.8	156.3	174.693	135.104	41.3	51.900	5.3	4.6	4	4.8	-1.631	-0.544	0.004	-0.288	-0.525	-0.358
China	2014	1364.270	145.3	7.3	2	4.1	22.8	167.9	180.831	141.895	57.5	52.500	5.3	4.6	4.1	4.8	-1.617	-0.523	0.323	-0.283	-0.414	-0.340
China	2015	1371.220	146.1	6.9	1.4	4.6	22.4	194.3	187.722	152.885	74.3	52.700	5.3	4.7	4.1	4.9	-1.661	-0.550	0.408	-0.289	-0.410	-0.282
China	2016	1378.665	146.9	6.7	2	4.7	41.1	216.2	197.997	168.162	65.7	52.000	5.4	4.7	4.1	4.9	-1.561	-0.499	0.355	-0.264	-0.334	-0.254
China	2017	1386.395	147.7	6.9	1.6	4.6	43.9	216.9	197.930	174.535	71.7	57.400	5.3	4.8	4.2	5	-1.505	-0.231	0.420	-0.148	-0.263	-0.270
China	2018	1392.730	148.3	6.6	2.4	4.6	46.2	218.3	187.834	154.516	46.5	57.800	5.3	4.9	4.3	5	-1.449	-0.261	0.477	-0.135	-0.202	-0.271

Australia	2013	23.128	3	2.2	2.5	5.1	22.9	155.3	102.545	124.131	86.7	82.600	5.7	5.2	4.6	5.1	1.436	1.031	1.640	1.801	1.779	1.785
Australia	2014	23.475	3.1	2.6	2.5	5.2	27.2	164.4	104.273	127.310	87.8	82.000	5.7	5.2	4.6	5.1	1.362	1.032	1.607	1.864	1.923	1.853
Australia	2015	23.816	3.1	2.5	1.5	5.6	28.8	175.6	109.430	135.435	87.8	81.400	5.7	5.2	4.6	5.1	1.356	0.885	1.565	1.789	1.825	1.882
Australia	2016	24.191	3.1	2.6	1.3	6	34.3	182.7	111.691	140.222	104.9	80.300	5.8	5.2	4.6	5.1	1.351	1.048	1.569	1.897	1.756	1.816
Australia	2017	24.602	3.2	2.2	2	6.3	36.8	176.2	111.087	140.471	113.4	81.000	5.8	5.3	4.6	5.2	1.384	0.890	1.536	1.930	1.682	1.795
Australia	2018	24.992	3.2	3.2	2.2	5.7	41.1	176.6	107.805	133.514	88.1	80.900	5.7	5.3	4.7	5.2	1.428	0.977	1.596	1.929	1.715	1.806
Singapore	2013	5.399	7636.7	5.1	2.4	2	100.8	109.1	127.213	142.819	242	88.000	6.3	5.6	5.3	5.7	0.037	1.378	2.089	1.970	1.706	2.078
Singapore	2014	5.470	7714.7	3.9	1	2	111	123.5	127.869	151.507	239.1	89.400	6.3	5.6	5.1	5.6	-0.099	1.186	2.183	2.233	1.825	2.071
Singapore	2015	5.535	7806.8	2.2	-0.5	3.1	103.8	115.1	123.449	149.437	207.8	89.400	6.3	5.7	5.1	5.6	-0.162	1.312	2.236	2.261	1.813	2.093
Singapore	2016	5.607	7908.7	2.4	-0.5	3	98.8	126.2	126.023	150.297	201.3	87.800	6.4	5.7	5.2	5.7	-0.150	1.496	2.206	2.181	1.825	2.088
Singapore	2017	5.612	7915.7	3.6	0.6	3.3	98.2	134.8	127.628	151.669	232.6	88.600	6.4	5.7	5.3	5.7	-0.169	1.615	2.220	2.115	1.823	2.134
Singapore	2018	5.638	7953	3.1	0.9	1.8	112	136.6	126.436	149.146	188.7	88.800	6.3	5.7	5.2	5.7	-0.059	1.510	2.231	2.132	1.845	2.175
Japan	2013	127.445	349.6	2	0.3	4.2	229.8	251.9	212.899	182.030	88.1	71.800	5.3	5.3	5.7	5.4	1.110	1.019	1.618	1.116	1.444	1.656
Japan	2014	127.276	349.1	0.4	2.8	4.4	237.9	257.1	216.645	178.264	90.3	72.400	5.4	5.3	5.6	5.4	1.036	0.969	1.812	1.143	1.602	1.695
Japan	2015	127.141	348.8	1.4	0.8	4.1	243.2	258.7	214.297	166.879	111.5	73.300	5.5	5.4	5.7	5.5	0.988	1.065	1.785	1.218	1.519	1.569
Japan	2016	126.995	348.4	1	-0.1	3.7	246.4	271.7	217.853	160.684	100.6	73.100	5.5	5.3	5.7	5.5	0.988	0.983	1.822	1.428	1.421	1.525
Japan	2017	126.786	347.8	1.7	0.5	3.3	248.1	279.1	220.210	157.512	128	69.600	5.6	5.4	5.6	5.5	1.008	1.112	1.617	1.374	1.566	1.522
Japan	2018	126.529	347.1	1.1	1.2	3.1	239.2	282	216.381	169.074	106.5	72.300	5.7	5.4	5.6	5.5	1.023	1.060	1.676	1.329	1.534	1.425

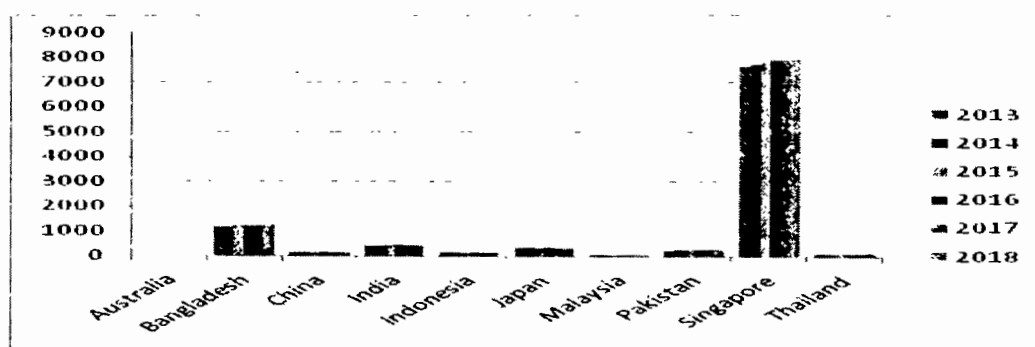
Note: Above table indicates the demographic, macro-economic, financial sector development, economic, political, institutional, technological, and governance structures of ten countries in the Asia-Pacific region for 2013-2018. The abbreviations such as PDensity, Unemp, Pdebt show population density, unemployment, and public debt (% of GDP). Similarly, FDCP, FDLL, FDA, and SMD stand for Private credit by deposit money bank to GDP (%), Liquid liabilities to GDP(%), Deposits money bank assets to GDP (%), and stock market development (% of GDP). FDCP tells us about the activities of financial intermediaries. FDLL represents the overall size of the financial intermediaries. FDA indicates the overall size of the banking sector. SMD represents the stock market capitalization to GDP. Likewise, EFIHF stands for economic freedom index issued by Heritage Foundation, BRS\_I, EES\_I, ISS\_I components of Global Competitiveness Index (GC\_I) stands for basic requirement index, efficiency enhancer's index, and innovation and sophistication index. VA, PS, GE, GR, GL, and GC depicts the voice and accountability, political stability, government effectiveness, government regulations, government law and order, and control of corruption taken as worldwide governance indicators.

#### Graphs-4. Graphical Depiction of Trend Analysis of the Ten Countries of the Asia-Pacific Region

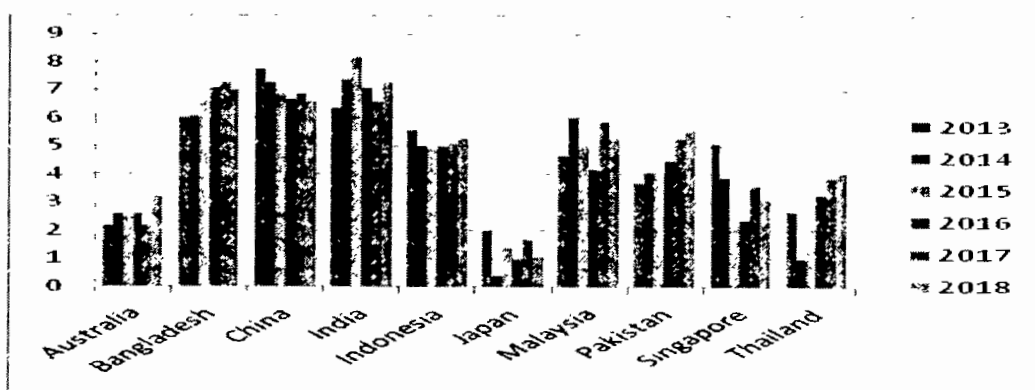
The graphical depiction of the factors mentioned above in the sampled countries of the Asia-Pacific region is given below;

##### Graphs-4.1. Demographic and Macro-Economic Structure

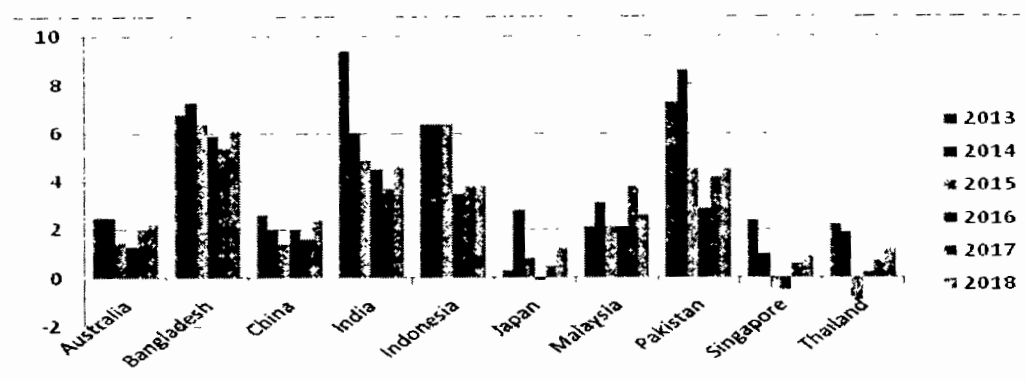
Graph-4.1.(a).Demographics Factors such as Population Density (Population/Area)



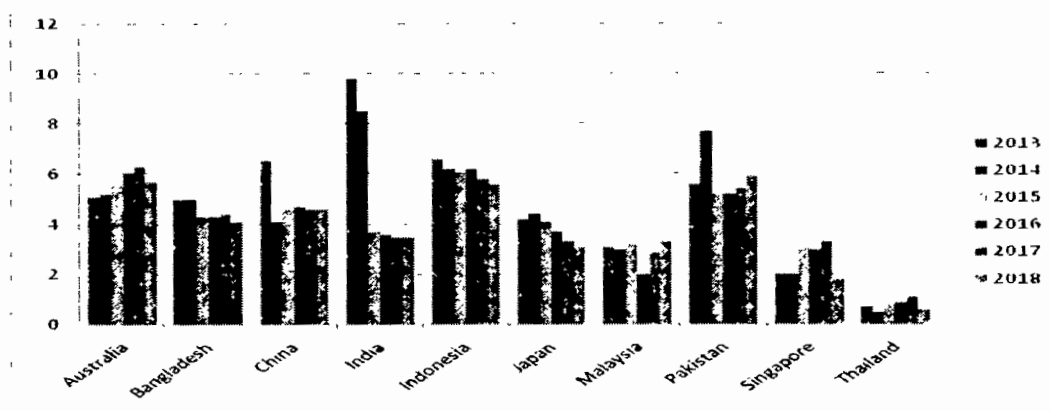
Graph-4.1.(b).Macro-Economic Factors such as GDP growth rate



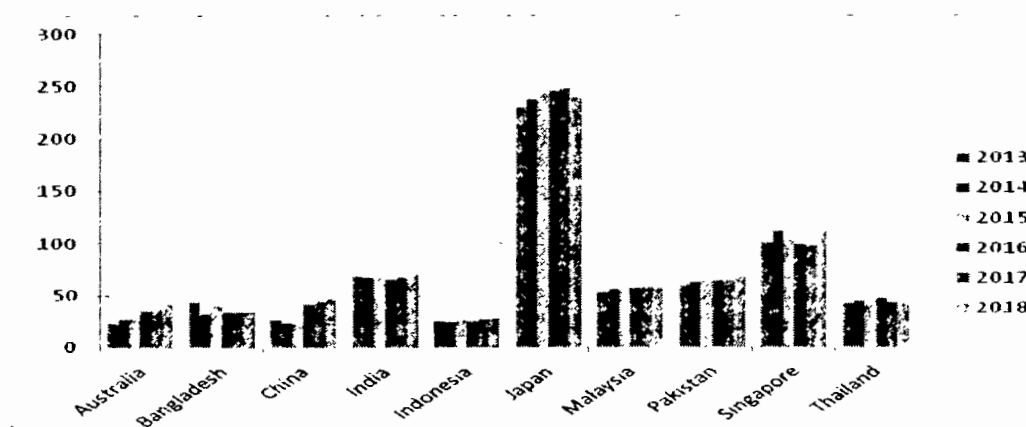
Graph-4.1. (c).Macro-Economic Factors such as Inflation rate



Graph-4.1.(d).Macro-Economic Factors such as the Unemployment rate

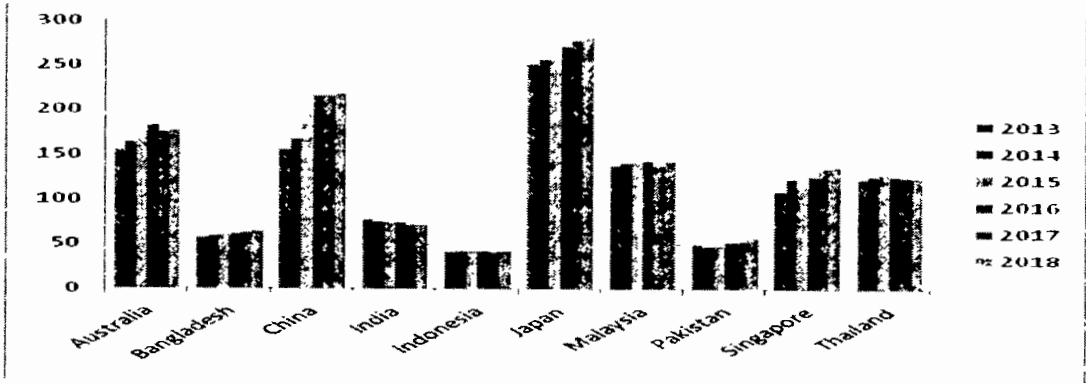


Graph-4.1.(e).Macro-Economic Factors such as Public Debt (% of GDP)

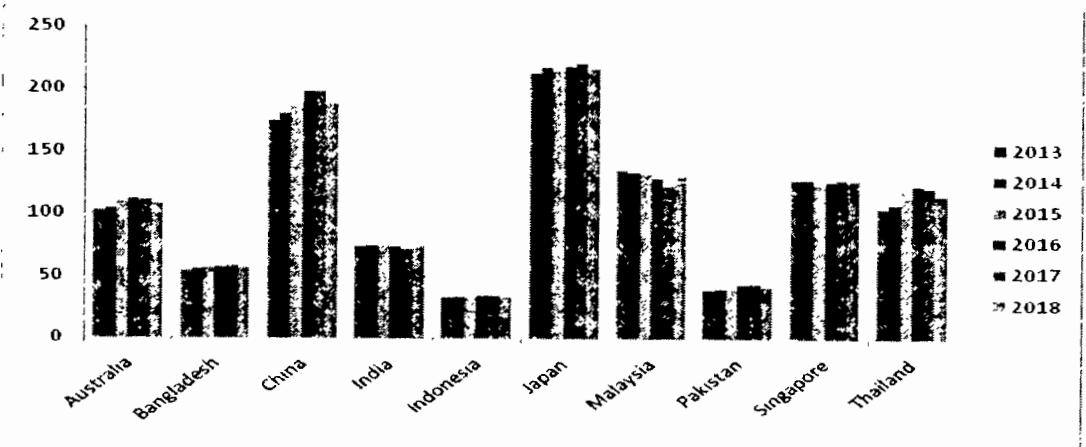


Graphs-4.2. Financial Sector Development

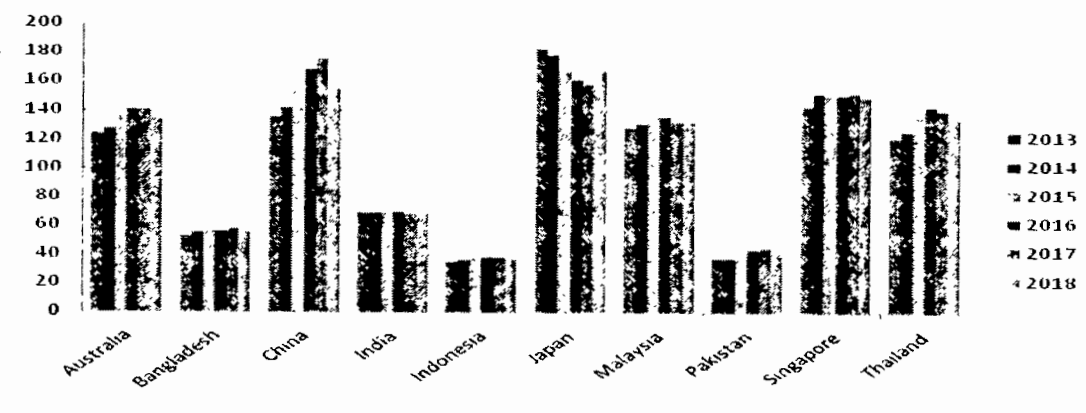
Graph-4.2 (a).Financial Sector Development such as Private credit by deposit money bank to GDP (%)



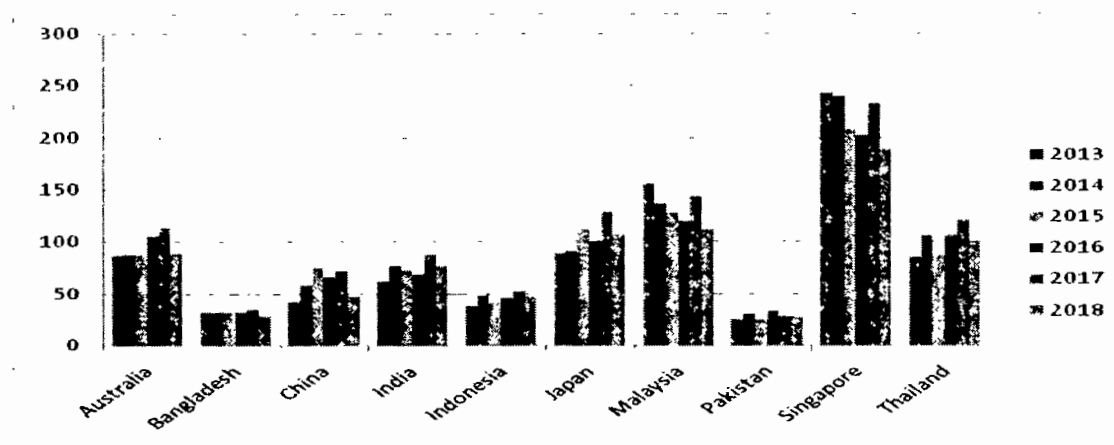
Graph-4.2 (b).Financial Sector Development such as FDLL (% of GDP)



Graph- 4.2(c).Financial Sector Development such as FDA (% of GDP)

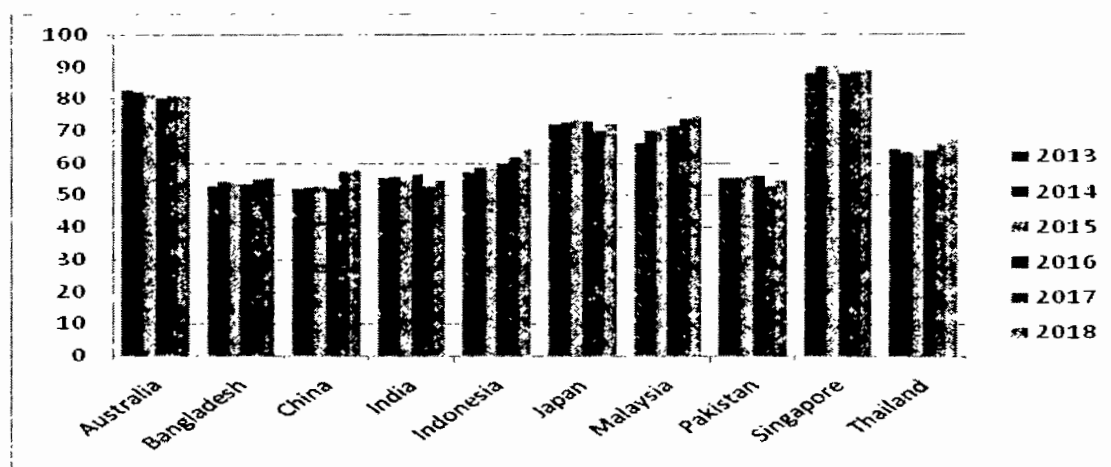


Graph-4.2 (d).Financial Sector Development such as SMD (% of GDP)

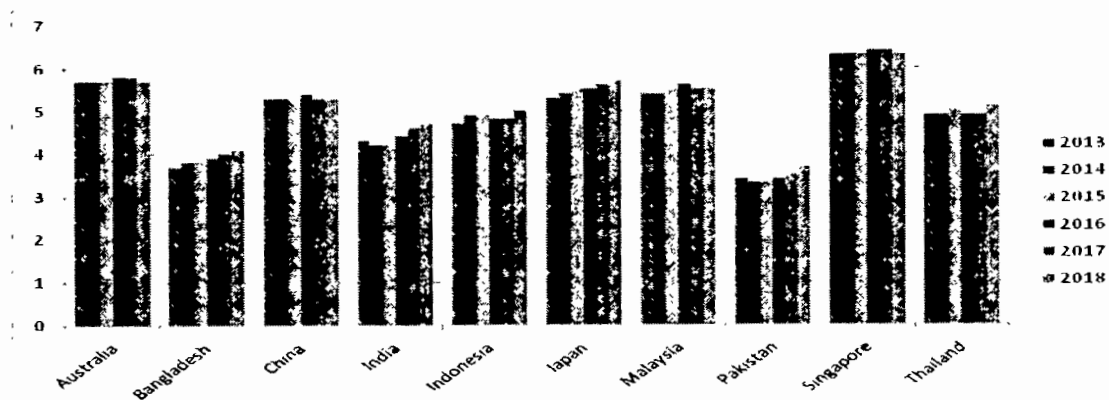
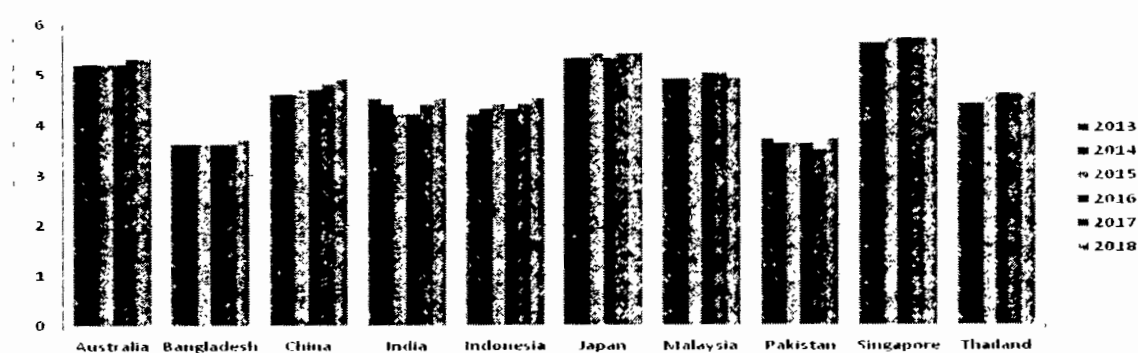
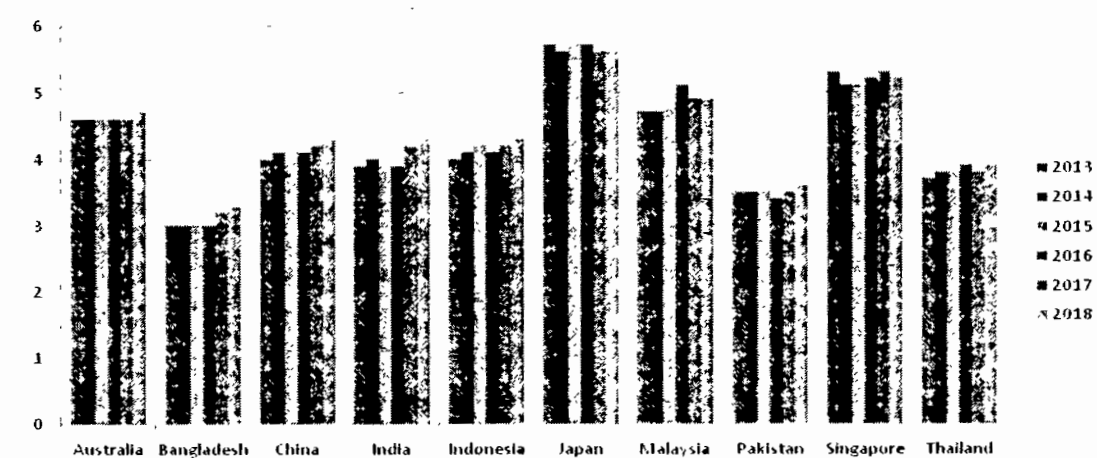


**Graphs-4.3.to 4.5. Institutional Factors (Economic, Political, and Governance Structures)**

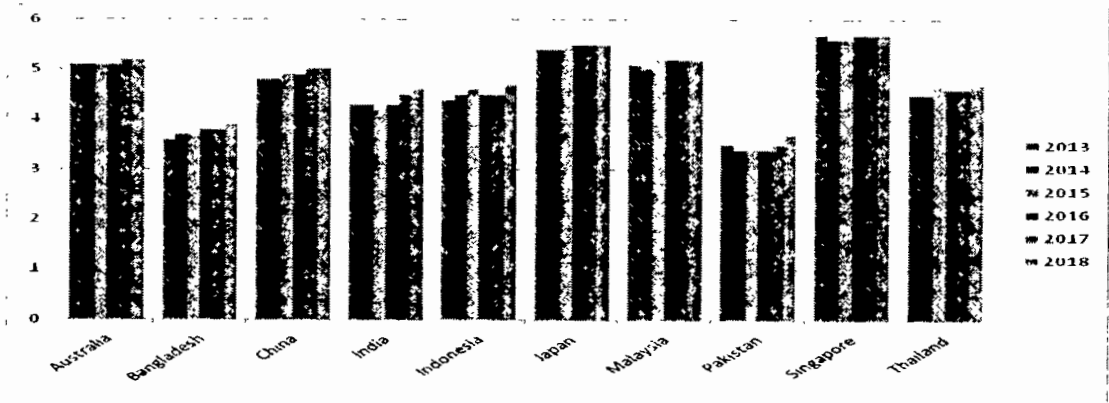
**Graph-4.3(a). Economic Freedom Index (Heritage Foundation)**



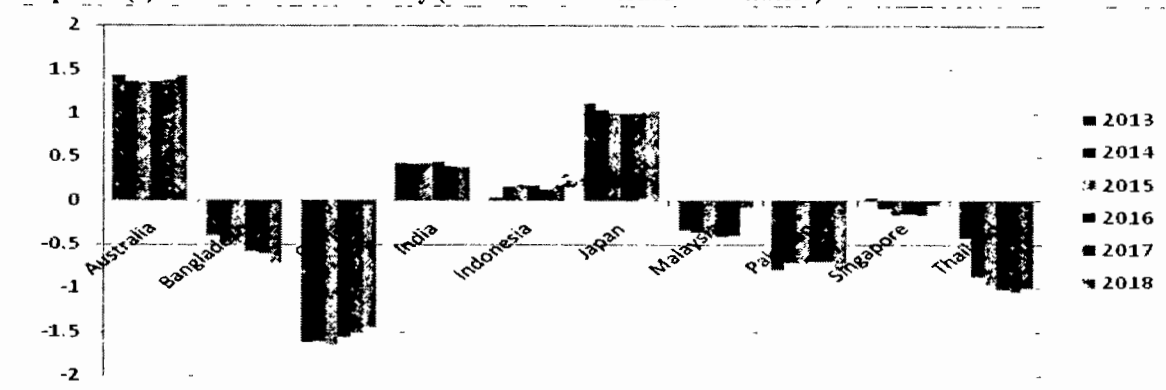


**Graph-4.4(a).**Basic Requirements Indice (BR\_I) ofGlobal Competitiveness Index (GC\_I)**Graph-4.4(b).**Efficiency EnhancersIndice (EE\_I) ofGlobal Competitiveness Index (GC\_I)**Graph-4.4(c).** Innovation and Sophistication Indice (IS\_I) of global Competitiveness Index (GC\_I)

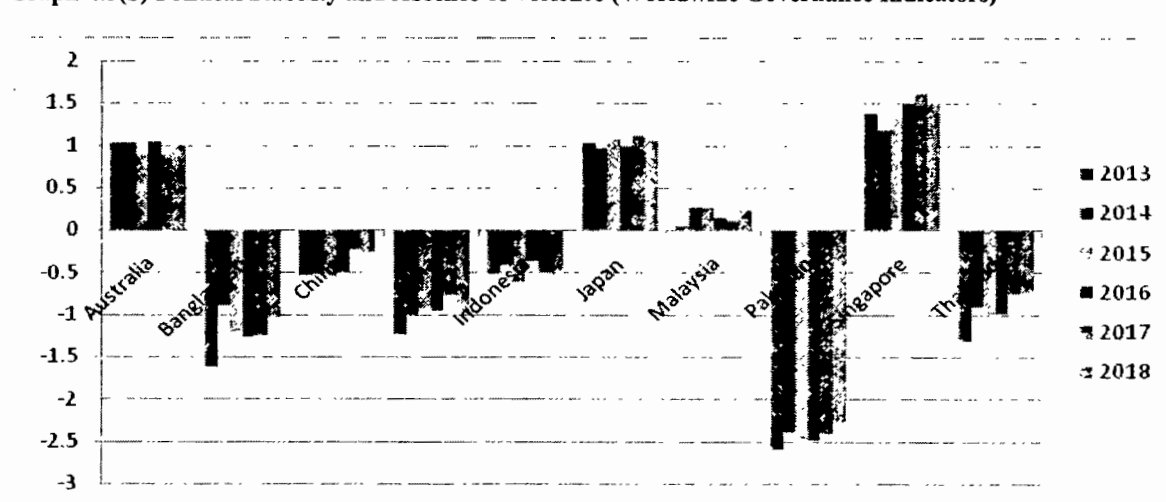
Graph-4.4(d).Global Competitiveness Index (GC\_I)



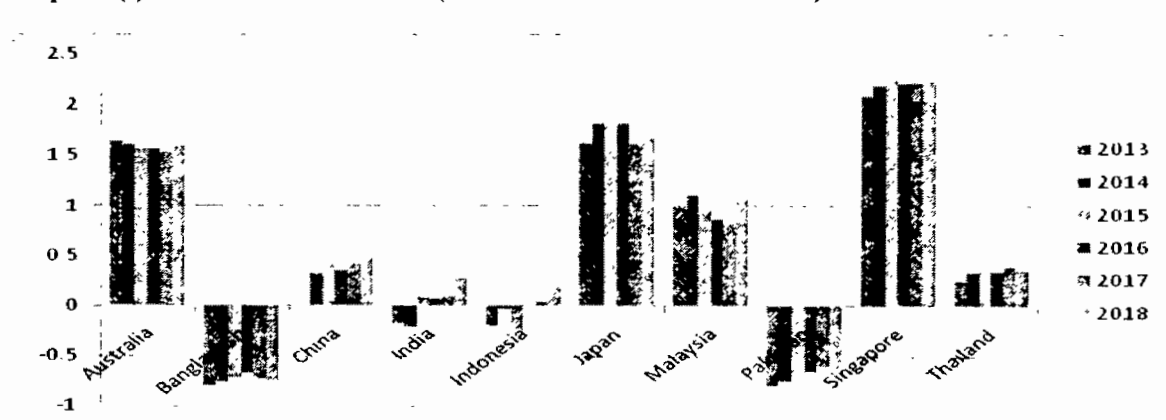
Graph-4.5 (a) Voice and Accountability (Worldwide Governance Indicators)



Graph-4.5(b) Political Stability and Absence of Violence (Worldwide Governance Indicators)



Graph-4.5(c) Government Effectiveness (Worldwide Governance Indicators)





**Table-12. List the Name of the Commercial Banks of Sampled Countries in the Asia-Pacific Region****PAKISTAN**

<b>Bank Name</b>	<b>Status</b>	<b>Main Exchange</b>	<b>ARs Downloaded</b>	<b>Remarks</b>	<b>Bank-Specific Factors</b>	<b>Corporate Governance Factors</b>	<b>Environmental Factors</b>
<b>Listed</b>							
Habib Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
National Bank of Pakistan	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
United Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
MCB Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Allied Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Al Habib	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Alfalah Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Punjab	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Askari Bank Limited	Active	Pakistan Stock Exchange	2013-2018	Excluded as the extreme values are present in the data	Yes	Yes	Yes
Habib Metropolitan Bank Limited	Active	Pakistan Stock Exchange	2013-2018	Excluded as complete ARs not available	Yes	No	No
Standard Chartered Bank (Pakistan)	Active	Pakistan Stock Exchange		Excluded as complete ARs not available	Yes	No	No
Faysal Bank Ltd	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
JS Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Soneri Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Summit Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Khyber	Active	Pakistan Stock	2013-2018		Yes	Yes	Yes

		Exchange					
Silkbank Limited	Active	Pakistan Stock Exchange			Yes	Yes	Yes
Samba Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes
First Credit And Investment Bank Ltd.	Active	Pakistan Stock Exchange		Excluded from the sample as the bank is not commercial			
First Dawood Investment Bank Limited	Active	Pakistan Stock Exchange		Excluded from the sample as the bank is not commercial			
First Women Bank Limited	Active	Pakistan Stock Exchange	2013-2018		Yes	Yes	Yes

## BANGLADESH

Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Rupali Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Pubali Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
United Commercial Bank Ltd	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
National Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Southeast Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
BRAC Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Dutch-Bangla Bank Limited	Active	Dhaka Stock Exchange		BSFs missing and ARs not downloaded	No	No	No
City Bank Ltd	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
AB Bank Ltd	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Asia Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Prime Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Mercantile Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
IFIC Bank Limited-	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Eastern Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Dhaka Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
One Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Trust Bank Ltd (The)	Active	Dhaka Stock Exchange		Excluded from the sample as the bank is not commercial			
NCC Bank	Active	Dhaka	2013-2018		Yes	Yes	Yes

Limited		Stock Exchange					
Jamuna Bank Ltd	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Mutual Trust Bank	Active	Dhaka Stock Exchange		Excluded from the sample as the bank is not commercial			
Premier Bank Ltd (The)	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Standard Bank Limited	Active	Dhaka Stock Exchange		Excluded as complete ARs not available	Yes	No	No
Uttara Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
LankaBangla Finance Limited	Active	Dhaka Stock Exchange		Excluded from the sample as the bank is not commercial			
Janata Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
Agrani Bank Limited	Active	Dhaka Stock Exchange	2013-2018		Yes	Yes	Yes
BASIC Bank Ltd	Active	Dhaka Stock Exchange	2013-2018	Excluded as the extreme values are present in the data	Yes	Yes	Yes
NRB Commercial Bank Limited	Active		2013-2018		Yes	Yes	Yes
Midland Bank Limited	Active	Dhaka Stock Exchange	2013-2018	Excluded as the extreme values are present in the data	Yes	Yes	Yes



INDIA							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
State Bank of India	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
HDFC Bank Ltd	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
ICICI Bank Limited	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Baroda	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
AXIS Bank Limited	Active	Bombay Stock Exchange		ARs not downloaded	Yes	No	No
Punjab National Bank	Active	Bombay Stock Exchange		ARs not downloaded	Yes	No	No
Canara Bank	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of India	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Union Bank of India	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Kotak Mahindra Bank Limited	Active	Bombay Stock Exchange		ARs not downloaded	Yes	No	No
Yes Bank Limited	Active	Bombay Stock Exchange		ARs not downloaded.	Yes	No	No
Central Bank of India	Active	Bombay Stock Exchange		Excluded from the sample as the bank is not commercial			
IDBI Bank Ltd	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Syndicate Bank	Active	Bombay Stock Exchange		ARs not downloaded	Yes	No	No
Indian Bank	Active	Bombay Stock Exchange		Excluded from the sample as most of the BSFs are missing	Yes	No	No
Indusind Bank Limited	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Oriental Bank of	Active	Bombay Stock		Excluded from the sample as ARs not			

Commerce Ltd		Exchange		downloaded			
Andhra Bank	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Indian Overseas Bank	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Allahabad Bank	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
UCO Bank	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Corporation Bank Ltd.	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
IDFC First Bank Ltd	Active	Bombay Stock Exchange		ARs not available			
Bank of Maharashtra	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Federal Bank Ltd. (The)	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
United Bank of India	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Punjab & Sind Bank	Active	Bombay Stock Exchange		ARs not downloaded.	Yes	No	No
Jammu and Kashmir Bank Ltd	Active	Bombay Stock Exchange			Yes	Yes	Yes
South Indian Bank Limited	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
RBL Bank Ltd	Active	Bombay Stock Exchange		ARs not downloaded. Most of the values are missing in the Bankscope database	No	No	No
Karnataka Bank Limited (The)	Active	Bombay Stock Exchange		ARs not downloaded.	Yes	No	No
Karur Vysya Bank Limited (The)	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Bandhan Bank Limited	Active	Bombay Stock Exchange	2015-2018	Excluded from the sample as only three years ARs are available			
City	Active	Bombay	2013-2018		Yes	Yes	Yes

Union Bank Ltd.		Stock Exchange					
DCB Bank Limited	Active	Bombay Stock Exchange		ARs not downloaded.	Yes	No	No
Lakshmi Vilas Bank Ltd	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes
Dhanlaxmi Bank Ltd	Active	Bombay Stock Exchange	2013-2018		Yes	Yes	Yes

## INDONESIA

Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Bank Rakyat Indonesia (Persero) Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Mandiri (Persero) Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Central Asia Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Negara Indonesia (Persero) Tbk, Pt	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Tabungan Negara (Persero)	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank CIMB Niaga Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT. Bank Panin, Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Danamon Indonesia Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Maybank Indonesia Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank OCBC NISP Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Permata Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT BPD Jawa Barat dan Banten Tbk	Active	Indonesia Stock Exchange		Excluded from Sample	No	No	No
PT Bank BTPN Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Bukopin	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Mega TBK	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes

PT Bank Mayapada Internasional TBK	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT. BPD Jawa Timur	Active	Indonesia Stock Exchange		ARs not downloaded from the website			
Bank Sinarmas TBK., PT	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Victoria International TBK (PT)	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Woori Saudara Indonesia 1906 Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Artha Graha Internasional Tbk	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Rakyat Indonesia Agroniaga Tbk	Active	Indonesia Stock Exchange		Excluded from Sample			
Bank QNB Indonesia Tbk., PT	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Capital Indonesia	Active	Indonesia Stock Exchange		Excluded from Sample			
PT Bank JTrust Indonesia Tbk	Active	Indonesia Stock Exchange		Excluded from Sample			
Bank China Construction Bank Indonesia Tbk., PT	Active	Indonesia Stock Exchange	2013-2018	ARs available in the Indonesian Language	No	No	No
Bank Mestika Dharma	Active	Indonesia Stock Exchange		As quarterly information is available	Yes	No	No
Pt Bank Tabungan Pensiunan Nasional Syariah	Active	Indonesia Stock Exchange		Excluded from Sample			
PT Bank Nationalnobu Tbk	Active	Indonesia Stock Exchange		ARs are not available on the website & most of the values in BSF missing	No	No	No
Bank MNC Internasional Tbk., PT	Active	Indonesia Stock Exchange		ARs are not available on the website & most of	No	No	No

				the values in BSF missing			
PT Bank Pembangunan Daerah Banten TBK	Active	Indonesia Stock Exchange	2014-2018	As most of the values are missing in BSF	No	No	No
Bank Bumi Arta	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Maspion Indonesia	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Yudha Bhakti	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	No
Bank Ganesha	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
PT Bank Agris	Active	Indonesia Stock Exchange		ARs not available	Yes	NO	No
PT Bank Of India Indonesia Tbk	Active	Indonesia Stock Exchange		ARs not available	Yes	No	No
PT Bank Ina Perdana Tbk	Active	Indonesia Stock Exchange		ARs are not available on the website & most of the values in BSF missing	No	No	No
PT Bank Dinar Indonesia Tbk	Active	Indonesia Stock Exchange		ARs are not available on the website & most of the values in BSF missing	No	No	No
Bank Mitraniga Tbk PT	Active	Indonesia Stock Exchange		ARs not available	Yes	No	No
Bank Harda Internasional	Active	Indonesia Stock Exchange	2013-2018		Yes	Yes	Yes
Bank Artos Indonesia, Pt	Active	Indonesia Stock Exchange		ARs are not available on the website & most of the values are missing in the BankScope database	No	No	No

CHINA							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Industrial & Commercial Bank of China (The) - ICBC	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
China Construction Bank Corporation Joint Stock Company	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Agricultural Bank of China Limited	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of China Limited	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Communications Co. Ltd	Active	Shanghai Stock Exchange	2013-2017		Yes	Yes	Yes
China Merchants Bank Co Ltd	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Industrial Bank Co Ltd	Active	Shanghai Stock Exchange	2013-2017		Yes	Yes	Yes
Shanghai Pudong Development Bank	Active	Shanghai Stock Exchange	2013-2017		Yes	Yes	Yes
China CITIC Bank Corporation Limited	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
China Minsheng Banking Corporation	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
China Everbright Bank Company Limited	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Hua Xia Bank co., Limited	Active	Shanghai Stock Exchange	2013-2017		Yes	Yes	No
Bank of Beijing Co Ltd	Active	Shanghai Stock Exchange		only 2010-2012 reports are available on the website	Yes	No	No
Bank of Shanghai	Active	Shanghai Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Jiangsu Co Ltd	Active	Shanghai Stock Exchange	2013-2017		Yes	Yes	Yes

China Zheshang Bank Co Ltd	Active	Hong Kong Stock Exchange	2015-2018	Most of the values are missing in the bankscope database	Yes	Yes	Yes
Ping An Bank Co Ltd	Active	Shenzhen Stock Exchange		BSFs are missing	No	No	Yes
Bank of Nanjing	Active	Shanghai Stock Exchange		ARs available in the Chinese Language	Yes	No	No
Bank of Ningbo	Active	Shenzhen Stock Exchange	2013-2018		Yes	Yes	Yes
Huishang Bank Co Ltd	Active	Hong Kong Stock Exchange	2013-2017		Yes	Yes	Yes
Shengjing Bank	Active	Hong Kong Stock Exchange	2014-2018		Yes	Yes	Yes
Chongqing Rural Commercial Bank	Active	Hong Kong Stock Exchange		Excluded from the sample as the bank is rural			
Bank of Hangzhou Co Ltd	Active	Shanghai Stock Exchange		ARs are not available on the website	Yes	No	No
Guangzhou Rural Commercial Bank Co., Ltd.	Active	Hong Kong Stock Exchange		Excluded from a sample as the bank is rural			
Bank of Jinzhou Co Ltd	Active	Hong Kong Stock Exchange	2015-2018	Most of the values are missing in BSFs	No	Yes	Yes
Bank of Tianjin	Active	Hong Kong Stock Exchange	2015-2018		Yes	Yes	Yes
Zhongyuan Bank Co Ltd	Active	Hong Kong Stock Exchange		ARs are not available on the website	Yes	No	No
Harbin Bank	Active	Hong Kong Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Changsha Co Ltd	Active	Shanghai Stock Exchange		ARs are not available on the website	Yes	No	No
Bank of Guiyang Co Ltd	Active	Shanghai Stock Exchange		ARs are not available on the website. BSFs for two years are missing	Yes	No	No
Bank of Zhengzhou Co., Ltd.	Active	Hong Kong Stock		ARs are not available on the website	Yes	No	No



		Exchange					
Bank of Chongqing	Active	Hong Kong Stock Exchange		ARs are not available on the website	Yes	No	No
Jiangxi Bank co LTD	Active	Hong Kong Stock Exchange		ARs are not available on the website	Yes	No	No
Huatai Securities Company Limited	Active	Shanghai Stock Exchange		Excluded from Sample			
Bank of Gansu	Active	Hong Kong Stock Exchange		ARs are not available on the website	Yes	No	No
Bank of Qingdao Co Ltd	Active	Hong Kong Stock Exchange	2015-2018		Yes	Yes	Yes
Bank of Jiujiang Co Ltd	Active	Hong Kong Stock Exchange		ARs are not available on the website	Yes	No	No
Qingdao Rural Commercial Bank Co Ltd	Active	Shenzhen Stock Exchange		Excluded from the sample as the bank is rural			
Bank of Xi'an Co Ltd	Active	Shanghai Stock Exchange		most of the values are missing in the Bankscope database & ARs are not downloaded	No	No	No
Jiangsu Changshu Rural Commercial Bank Co., Ltd	Active	Shanghai Stock Exchange		Excluded from the sample as the bank is rural			
Jilin Jiutai Rural Commercial Bank Corporation Ltd	Active	Hong Kong Stock Exchange		Excluded from the sample as the bank is rural			
Wuxi Rural Commercial Bank Co.,Ltd	Active	Shanghai Stock Exchange		Excluded from the sample as the bank is rural			
Jiangsu Suzhou Rural Commercial Bank Co	Active	Shanghai Stock Exchange		Excluded from the sample as the bank is rural			
Jiangsu Jiangyin Rural Commercial Bank	Active	Shenzhen Stock Exchange		Excluded from the sample as the bank is rural			
Jiangsu Zhangjiagang Rural Commercial Bank Co. Ltd	Active	Shenzhen Stock Exchange		Excluded from the sample as the bank is rural			

Tongchuang Jiuding Investment Management Group Co., Ltd	Active			Excluded from the sample as the bank is rural			
Luzhou City Commercial Bank co.,Ltd	Active	Hong Kong Stock Exchange		Excluded from the sample as the bank is rural			
The Pacific Securities Co.,Ltd.	Active	Shanghai Stock Exchange		Excluded from the sample as the bank is rural			
Panda Financial Holding	Active	Shanghai Stock Exchange		Excluded from the sample as the bank is rural			
Yangzhou Guangling District Taihe Rural Micro-finance Co Ltd	Active	Hong Kong Stock Exchange		Excluded from the sample as the bank is rural			
China Guangfa Bank Co Ltd	Active	Hong Kong Stock Exchange	2013-2017		Yes	Yes	Yes
China Bohai Bank	Active	Hong Kong Stock Exchange	2013-2017		Yes	Yes	Yes

MALAYSIA							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Malayan Banking Berhad - Maybank	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
Public Bank Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
RHB Bank Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
Hong Leong Bank Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
Affin Bank Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
Alliance Bank Malaysia Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
CIMB Bank Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
United Overseas Bank (Malaysia) Bhd.	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes
AmBank (M) Berhad	Active	Bursa Malaysia			Yes	Yes	Yes
HSBC Bank Malaysia Berhad	Active	Bursa Malaysia	2013-2018		Yes	Yes	Yes

THAILAND							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
The Siam Commercial Bank Public Company Limited	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Kasikorn Bank Public Company Limited	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Bangkok Bank Public Company Limited	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Krung Thai Bank Public Company Limited	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Ayudhya Public Company Ltd.	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
TMB Bank Public Company Limited	Active	Bangkok Stock Exchange			Yes	Yes	Yes
CIMB Thai Bank Public Company Limited	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Kiatnakin Bank Public Company Limited-Kiatnakin Phatra Financial Group	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of China (Thai) Plc	Active	Bangkok Stock Exchange	2013-2018	Excluded from the sample as the extreme values are present in the data	Yes	Yes	Yes
Mega International Commercial Bank PCL	Active	Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
Thanachart Bank		Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes
UOB Thai		Bangkok Stock Exchange	2013-2018		Yes	Yes	Yes

TISCO Bank		Bangkok Stock Exchange			Yes	Yes	Yes
ICBC		Bangkok Stock Exchange			Yes	Yes	Yes

AUSTRALIA							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Commonwealth Bank of Australia	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
Australia and New Zealand Banking Group Limited	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
Westpac Banking Corporation	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
National Australia Bank Limited	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
Bendigo and Adelaide Bank Limited	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
Bank of Queensland Limited	Active	Australian Securities Exchange	2013-2018		Yes	Yes	Yes
ING Bank (Australia) Limited	Active		2013-2017		Yes	Yes	Yes
AMP Bank Limited	Active		2013-2018		Yes	Yes	Yes
Bank Australia Limited	Active		2013-2018		Yes	Yes	Yes
Bank of Sydney Ltd	Active		2013-2018		Yes	Yes	Yes

SINGAPORE							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Oversea-Chinese Banking Corporation Limited OCBC	Active	Singapore Exchange	2014-16, 2018		Yes	Yes	Yes
United Overseas Bank Limited UOB	Active	Singapore Exchange	2013-2018		Yes	Yes	Yes
Hong Leong Finance Limited	Active	Singapore Exchange					
DBS Bank Ltd	Active	Singapore Exchange	2013-2018		Yes	Yes	Yes

JAPAN							
Bank Name	Status	Main Exchange	ARs Downloaded	Remarks	Bank-Specific Factors	Corporate Governance Factors	Environmental Factors
<b>Listed</b>							
Japan Post Bank Co Ltd	Active	Tokyo Stock Exchange	2013-2018	Most of the values are missing in the BankScope database	No	Yes	Yes
Chiba Bank Ltd.	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Shizuoka Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
North Pacific Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of Kyoto	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Hachijuni Bank, Ltd	Active	Tokyo Stock Exchange	2014-2018		Yes	Yes	Yes
Shinsei Bank Limited	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Hiroshima Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The 77 Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Chugoku Bank, Ltd	Active	Tokyo Stock Exchange	2014-2018		Yes	Yes	Yes
The Gunma Bank Ltd	Active	Tokyo Stock Exchange	2015-2018		Yes	Yes	Yes
Iyo Bank Ltd	Active	Tokyo Stock Exchange	2016-2018		Yes	Yes	Yes
The Juroku Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Toho Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Shiga Bank, Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Nanto Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Hyakugo Bank Ltd.	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Ogaki	Active	Tokyo		ARs not downloaded	Yes	No	No



Kyoritsu Bank		Stock Exchange					
San-In Godo Bank, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Keiyo Bank, Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Hyakujushi Bank Ltd.	Active	Tokyo Stock Exchange			Yes	No	No
The Hokkoku Bank Ltd	Active	Tokyo Stock Exchange	201+H69-2018		Yes	Yes	Yes
Kiyo Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Musashino Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Suruga Bank, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Bank of Nagoya	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Bank of Iwate, Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Yamanashi Chuo Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Awa Bank	Active	Tokyo Stock Exchange	2014-2018	ARs not downloaded	Yes	No	No
The Oita Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Aichi Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Akita Bank Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Shikoku Bank Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Miyazaki Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Aomori Bank Ltd	Active	Tokyo Stock Exchange	2016-2018	ARs not downloaded	Yes	No	No
Tochigi Bank, Ltd.	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No

Chiba Kogyo Bank	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Fukui Bank Ltd	Active	Tokyo Stock Exchange	2015-2018		Yes	Yes	Yes
Yamagata Bank Ltd.	Active	Tokyo Stock Exchange			Yes	Yes	Yes
The Ehime Bank, Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
The Bank of Saga, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Tsukuba Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Bank of the Ryukyus Ltd.	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Towa Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Bank of Okinawa	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Michinoku Bank, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Chukyo Bank Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Shimizu Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Taiko Bank Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Kita-Nippon Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
First Bank of Toyama, Ltd.	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Tomato Bank, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Bank of Kochi, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Seven Bank Ltd	Active	Tokyo Stock Exchange	2013-2018		Yes	Yes	Yes
Nagano Bank Ltd.	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No

Tottori Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Tohoku Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Daito Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Minami-Nippon Bank, Ltd.	Active	Fukuoka Stock Exchange		Not part of the sample			
Chikuho Bank	Active	Fukuoka Stock Exchange		Not part of the sample			
Fukushima Bank	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
The Miyazaki Taiyo Bank, Ltd	Active	Fukuoka Stock Exchange		Not part of the sample			
Howa Bank, Ltd	Active	Fukuoka Stock Exchange		Not part of the sample			
Fukuoka Chuo Bank, Ltd.	Active	Fukuoka Stock Exchange		Not part of the sample			
The Bank of Toyama, Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
Shimane Bank Ltd	Active	Tokyo Stock Exchange		ARs not downloaded	Yes	No	No
DSB CO Ltd	Active	Tokyo Stock Exchange		Not part of the sample			