EXAMINING THE IMPACT OF INCOME DIVERSIFICATION ON BANK RISK

"EVIDENCE FROM BANKS OF PAKISTAN"

By

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ISLAMABAD

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

Master of Science in Business Administration

To

FACULTY OF MANAGEMENT SCIENCES

NATIONAL UNIVERSITY OF MODERN LANGUAGES

ISLAMABAD

THESIS/DISSERTATION AND DEFENSE APPROVAL FORM

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Thesis/ Dissertation Title: EXAMINING THE IMPACT OF INCOME DIVERSIFICATION ON BANK RISK. "EVIDENCE FROM BANKS OF PAKISTAN"

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ACKNOWLEDGEMENT

First and foremost, I would like to praise ALLAH ALMIGHTY, the Most Gracious, and the Most Merciful for His blessing given to me during my study and in completing this thesis. This is indeed a pleasure for me to write this acknowledgement on completion of my academic research project and subsequent writing of this manuscript. I submit humble thanks to my supervisor Dr. Abdul Wahid, Faculty of Management Sciences, NUML University, Islamabad for his patience, valued guidance, and supervision throughout the research process. I also pay my compliments regarding the academic guidance and support extended by my sincere class fellows during my studies at NUML University, Islamabad.

DEDICATION

I dedicate this thesis to all my respectable teachers in my entire academic career and all members of my family who proved to be the real source of inspiration that helped in achieving my higher educational goals while trying to maintain a balance among domestic, professional, and academic facades. I also dedicate this dissertation to my many friends who have supported me throughout the process.

Abstract

This research adds to the debate about the effects of diversification in the banking industry by looking at how diversification performance, risk, and efficiency gates are affected when banks enter non-traditional industries. Initially, the study looks into how revenue diversification affects bank risk in Pakistani banks. The data show that in the Pakistani banking industry, diversity and bank risk have an inverse connection. The study also evaluates how a bank's loan portfolio affects its risk. This study used a sample size of 15 banks and data from their annual reports to achieve the stated purpose. Income diversification and the bank loan portfolio were employed as independent factors, while the standard deviation of ROA was used as a dependent variable. The size of the banks, as well as equity, loans, and deposits, were used as control variables in the study. Descriptive statistics, correlation, and regression analysis were used in the study. Income diversification has a detrimental influence on Pakistan's bank risk, according to the conclusions of the study. As a result, policy frameworks for improving bank performance should take into account factors such as the size of the bank, its customer base, and its financial leverage. Diversification effects may differ depending on the institutional structure, macroeconomic conditions, and political environment of emerging economies, as well as the outcomes of developed countries' diversification initiatives.

CHAPTER 1

INTRODUCTION

1.2 Introduction

Traditionally, banks have made money by offering lending and deposit services. However, the international financial institution has witnessed a considerable transition in its business strategies over the last 30 years. Banks have diversified from traditional deposit and lending activities and toward nontraditional industries in both established and developing nations. As a result, non-interest earnings as a percentage of total income have gradually grown. Legislative developments and the global context for the financial industry are the key drivers of difference (Allen & Santomero, 2001). Changes in the international banking industry's business models have occurred on a scale few other industries have seen, with far-reaching repercussions. With banks diversifying their revenue streams to expand the new financial business units, now it is common for them to increase noninterest income (NII onwards) by, underwriting securities, acting as an insurance firm, and delivering high-leverage forex trading services with lower capital requirements (Sawada, (2013); Lee et al., (2014); Mercieca et al., 2007).

Increased competition, government regulations (capital requirements), and the uncertainty of interest-based income (IBI onwards) in the banking sector have prompted banks to consider non-traditional income production methods. Banks that operate in a competitive environment are more stable because they diversified their portfolios, which improves productivity and risk-adjusted returns (Amidu & Wolfe, 2013). Banks are increasingly looking for viable IBI alternatives that have a lower risk of default and can counterbalance the fluctuation of interest-based profit. According to traditional banking theory, diversity of income-generating businesses is a method for banks to minimize total risk, and credit diversification can lessen the occurrence of default risk. According to classical banking theory, banks have two main means of revenue: interest-based income and NII. To thrive in the fierce competitiveness of the banking business, banks must diversify their sources of revenue beyond traditional interest-based sources (Huang & Chen, 2006). Banks diversify their activities to diversify risk and engage NII production activities to stabilize profitability through imperfect correlation of interest and non-interest income to be competitive with economic challenges (Sahoo & Mishra, 2012).

Diversification is seen to be important in risk management. To maintain credit portfolio diversity, the central bank imposes limits on exposure to a particular sector (Afzal & Mirza, 2011). This is predicated on the idea that greater diversity lessens the likelihood of a bank failure by removing the sector's systemic risk. In this sense, larger banks are anticipated to be more diversified than small enterprises in terms of overall assets and branch networks. The economies of size and scope that larger banks are predicted to encounter as compared to smaller banks are expected to contribute to their diversification capacity. However, there are at least two reasons why banks may choose not to diversify. First, they may face moral risks, which could lead to a greater concentration of their lending portfolio. This moral hazard is likely to occur as a result of the "too big to fail" philosophy, which argues that bigger banks are secure than local banks and hence may grow without diversifying their risks by investing in few more successful sectors. Additionally, if banks believe they are receiving a bank bailout from the administration or investors, they will be encouraged to follow riskier businesses to increase earnings, with little motivation to diversify. In this situation, there may not be a substantial relationship between credit portfolio size and diversification. Moreover, banks will have no motivation to diversify if diversification does not reduce risk and constrains bank profits. Bank management will be hesitant to diversify beyond prudential boundaries unless there are economic benefits from risk mitigation or improved performance. Firm diversity is crucial not just for banks; there is a vast body of business finance literature that examines the impact of firm diversification on productivity using a combination of empirical and theoretical evidence. If we can show that banks are diversified but that diversification has little effect on risk, we can argue that banks are simply diversifying to meet regulatory obligations. As a result, diversification's role as a risk-mitigation strategy, as proposed by classic financial economic theory, is not present.

The banking industry has a tremendous impact on the financial intermediation business all over the world. In response to economic and financial sector reforms, banks are expanding beyond their traditional commercial activities and diversifying their businesses. The banking industry has evolved, resulting in a wide range of operations and a high level of complexity. Diversification, or the mixing of a wide variety of investments within a portfolio, is a wonderful strategy to reduce risk. Its primary goal is to maximize profits. Banks have progressed from traditional lines of business to non-interest-earning intermediate services. Mobilizing deposits was the regular line of business, whereas intimidation services comprised financial guarantees, insurance, and other

financial services (Senyo et al., 2015). By offering more products and services, banks may diversify their revenue.

The financial industry has changed dramatically in both developed and developing nations over the last 30 years. Banks have expanded their activities and developed new business models outside of their core interest activities as a result of deregulation and fierce competition. Banks have increased their revenue streams by diversifying into new areas such as stock financing and trading, stock brokerage and corporate finance, and other NII generating activities. The impacts of these variations on banks' profitability, such as risk and returns, have already been thoroughly addressed in the literature, though there has yet to be a consensus. Because of their naturally dynamic nature, NII operations are typically linked with increased earnings but also greater risk. According to Stiroh & Rumble, (2006) greater NII share influences bank return volatility, resulting in increased risk. Banks that are more reliant on NII services have a larger default risk than weak banks that solely make loans, as per Lepetit et al., (2008). The main beneficiaries of this solid relationship, which is driven by incentive and fee services, are financial institutions. According to their findings, a higher proportion of business transactions is not related to increased risk, and in some cases, it predicts reduced asset and default risks for smaller financial firms or banks. Diversification does not benefit small European banks., according to Mercieca et al., 2007). Lower profit and higher risk are associated with larger NII shares, yielding reduced risk revenues. Additionally, they consider trading to be both risky and inefficient Diversification. Chiorazzo et al. (2008) show that ID enhances the risk/return trade-off for Italian banks. Large banks profit more from diversifying their revenues. Financial institutions are struggling to comprehend scale expansion and deal with the intensifying competition triggered by the entry of foreign banks and other nonbank lending companies as a result of rapid financial global integration opening up of the financial sector by relying individually on interest income. Commercial banks are concentrating more on increasing atypical bank businesses, especially the noninterest revenue industry, as interest rate deregulation accelerates. This shifts the usual income structure away from interest earned and enables banks to diversify their earnings. The ratios of interest and NII are referred to as income diversification (ID onward). In annual reports, conventional interest income refers to the interest and current revenue produced by banks. NII includes all fees, commissions, currency trading, income from investments, and operational revenues. The share of NII serves as an indicator of income diversification in this study because NII is the key variable.

Income Diversification of banks can result in enormous gains, but it also introduces fresh business risks (DeYoung & Roland, 2005). The noninterest revenue industry could introduce new operations, markets, credit, liquidity, and legal risks. Portfolio theory predicts that if a noninterest revenue firm is not completely connected with a typical interest income business, it will diversify and minimize risk. To better understand the impact of NII banks' entire risk is divided according to portfolio theory. As per the theory of portfolio, the total risk of the bank is allocated into two sections, including interest income risk and NII risk. One of the most important factors in determining a bank's overall health is the quality of assets. The quality of the loan portfolio and the credit risk management programmer are the two most significant variables that influence overall asset quality. Loans are the riskiest capital and typically make up the bulk of a bank's assets. Stocks may make up a substantial part of the value of an asset while also posing considerable dangers. Other real estates, other assets, off-balance-sheet companies, cash and due from accounts, as well as premises and fixed assets, may all have an impact on asset quality.

Corporate governance devotes a great deal of time, effort, and finances to managing their assets, especially the portfolio of loans. Challenges with these portfolios can influence their ability to control other aspects of the organization effectively and efficiently. When assessing a bank's assets, assessors should be thorough and attentive, as they can have a substantial impact on most other aspects of the bank's operations. The quality of asset review takes into account the credit risk related to loan and equity investments, other real estate holdings, and other assets, as well as off-balance sheet operations. What effect does income diversity have on bank risk? After evaluating numerous studies, academics still found the results to be unpredictable and contradicting, mixed and contradictory, and the available literature does not provide consensus on the matter. Several empirical research has been conducted Demsetz & Strahan, 1997); Stiroh, 2004); nevertheless, the research on this topic focuses mostly on the banking markets in the United States and Europe, Other economies, such as Pakistan, have limited empirical evidence. With this study, I hope to address a gap in the literature by conducting an empirical analysis of the impact of income diversity and asset portfolio quality on bank risk in Pakistan. The study's main contribution is to look at the impact of income diversification and asset portfolio quality on bank risk in Pakistan using data from commercial banks. Second, the entire risk is dissected into two components using portfolio theory, which decomposes the overall risk to study the influence of NII further. When the

diversification effect of income structure is studied, this work contributes to the associated studies by arguing that the connection between interest and NII shows a critical role.

1.2 Banking System of Pakistan

Any country's banking industry makes significant contributions to its country's economic growth. The financial industry of the country also plays a vital part in the general economy's sustainability and contributes significantly to our country's economic development. By the time Pakistan gained independence, there was only one bank operating in the country, the Habib Bank Limited (HBL). HBL was established in 1942 and has been providing economic activities since that time. With the passage of time, the country's banking network begins to expand. The State Bank of Pakistan became the country's first and largest bank, and a slew of smaller banks sprang up in its wake. In Pakistan, there are currently 34 commercial banks with a network of (13039) branches operating throughout the country. Pakistan's banking sector is enhancing its money-related administrations to clients while also adding significantly to Pakistan's economy's consistent quality (SBP Newsletter, 2013)

The banking business in Pakistan has changed dramatically in the seventy years since the country's sovereignty. At first, the banking industry faced numerous challenges, including a lack of resources, unconfident financial conditions, volatile political circumstances, and a shortage of educated and competent human resources, all of which were critical for the control of cash matters and the growth of that specific sector. SBP was established on July 1, 1948 as the government's bank to handle money-related concerns in order to manage these situations and overcome other associated issues. As a result, changes were made to the 1956 Act of Pakistan to expand these restrictions, as well as the principles of SBP. The private sector is required by the State Bank in order to establish banks and other monetary institutions in the country. During the 1960s, it became embroiled in an unfavorable challenge and illegal practices as a result of reward and destruction. After some time, money-related adjustments and administrative changes have improved the presentation of the Pakistani banking sector (Ahmad et al., 2010)

As per Lucian Blaga, (2015) each country's reserve bank is responsible for ensuring that inflation is kept under control in order to avoid currency depreciation and to keep the economy stable. The central bank's role is to ensure that all commercial banks are properly directed in order to defend

the public interest and avoid money laundering. The Federal Reserve is an entity that is responsible for licensing and regulating banks after they have met all of the requirements, and it has the right to revoke any bank's license to function if it does not comply with its rules. The bank's stability can be judged by its effective management structure and policies. The regulatory authority issues several regulations for commercial banks, one of the most significant of which is establishing solid risk management processes.

The SBP, as the regulatory agency, will be in charge of implementing credit and monetary policy, which will be designed to meet the administration's core inflation targets. The SBP is responsible for overseeing and ensuring the smooth operation of all subsidiary banks that operate under the supervision of the central bank. The SBP has specified several laws for the entire industry's long-term financial and economic success from time to time. After the global financial crisis, the problem of financial risk management has gotten a lot of attention because the main causes of the crisis were liquidity issues, on- and off-balance sheet assets, and capital requirements. The Basel Accord provides rules to strengthen several aspects of the banking sector in response to the financial crisis. The SBP has set many regulatory measures and principles to ensure that solid risk management procedures are implemented by banking institutions (SBP Basel Accord III, 2013).

1.2.1 State Bank of Pakistan

There was no central bank in Pakistan after its independence in 1947, therefore the Reserve Bank of India (RBI) took up these responsibilities (Ahmed, 2008). After that, in July 1948, the SBP was formed to handle the RBI's central banking activities. As per Arby (2004), the SBP undertakes a variety of conventional and non-traditional tasks in order to accomplish corporate goals.

As per the SBP Act 1956, the SBP is a self-governing organization tasked with overseeing the country's credit system and money supply (Ahmed, 2008). The SBP also oversees banking sector and has a major impact on how Pakistan's financial sector operates. To preserve and improve the sustainability of financial institutions, the SBP has taken many key measures, including developing risk management standards and a road plan for implementing the Basel Accords.

1.2.2 Scheduled Banks in Pakistan

As per the SBP's Statistics reports of Pakistan The local banking industry has 11551 branches as of December 31, 2014, comprising 2097,885, 18, and 584 branches of public, local commercial, foreign and specialized banks respectively. Pakistan has 34 commercial banks (five public sector,

22 private sector, and seven foreign banks) and four specialized banks (SBP Newsletter, 2013). Commercial banks in Pakistan provide a variety of services to both people and businesses. These banks offer payment agency services as well as intermediation services. They also provide local and international financial service, such as accepting checks, issuing letters of credit, and providing other guarantees. Specialized banks, on the other hand, offer loans to a variety of key sectors of the economy, including agriculture, housing, manufacturing, and small and medium-sized businesses (SMEs) (Small and Medium Enterprise). Regional rural banks in the nation provide fewer tasks than financial institutions (Ishtiaq, 2015).

As previously said, financial institutions play a critical part in Pakistan's economic development. In recent years, banks in Pakistan have seen significant expansion in terms of assets, deposits, and loans. As a result, these banks' intermediation role in mobilizing savings has increased substantially. The total assets of local banks have grown from Rs 2.209 trillion in 2002 to 12.106 trillion in 2014, according to the SBP's Banking Statistics of Pakistan. Similarly, these banks' deposits have increased from PKR 9.230 trillion in December 2002 to PKR 16.626 in December 2014. At the same time, loan size has increased from PKR 10.688 trillion in 2002 to PKR 49.187 trillion in 2014. At the same time, the relative holdings of various Pakistani banks have shifted, primarily as a result of the early 1990s banking sector changes (Ishtiaq, 2015). Following the deregulation of several state banks and the merger or purchase of many private banks in recent years, the Pakistan’s banking sector has undergone significant changes in its structure, governance, and ownership (Burki and Niazi, 2010). As a consequence, according to the SBP's Banking Statistics of Pakistan released in December 2014, private sector banks had approximately 80% of market share.

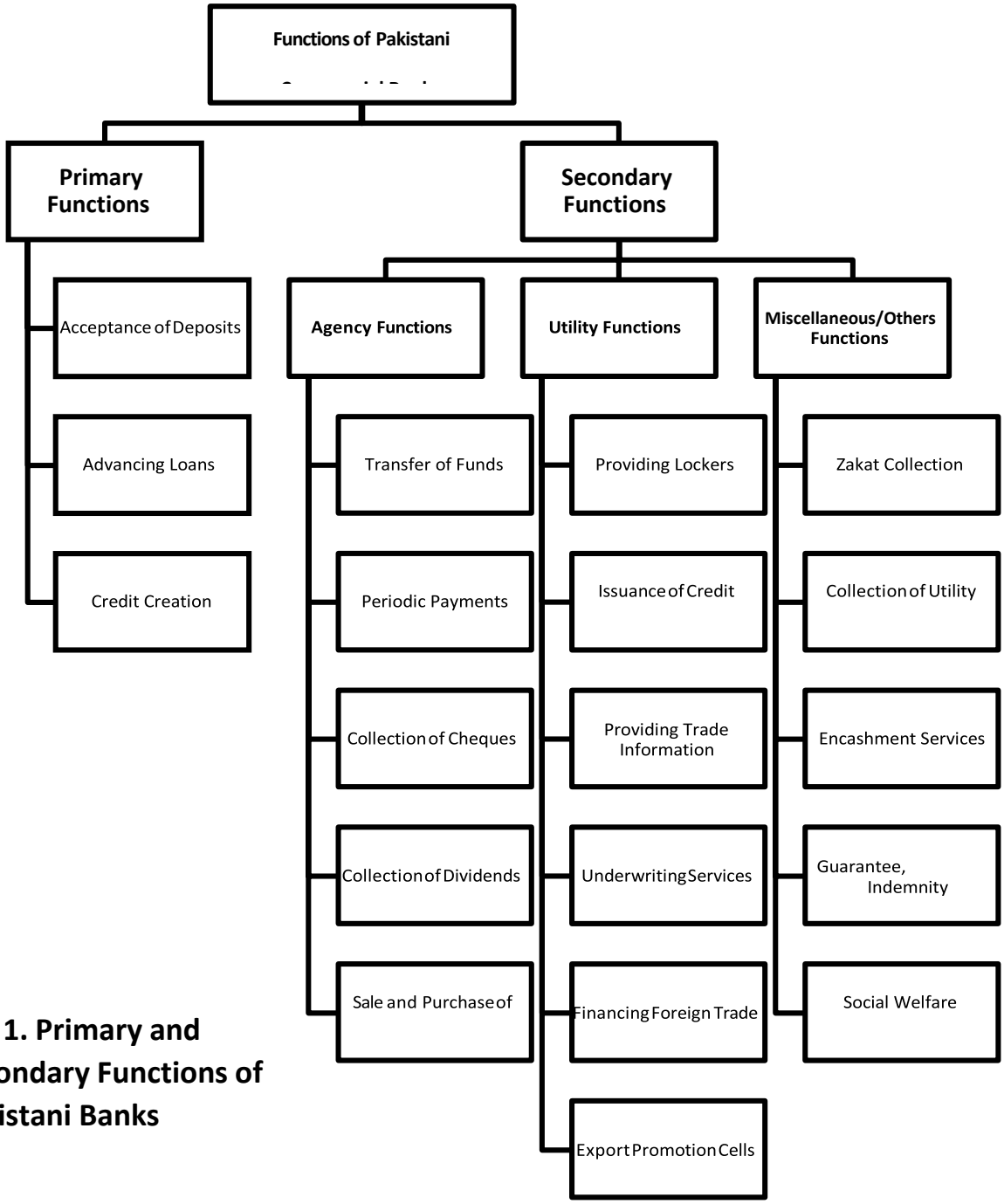


Fig. 1. Primary and Secondary Functions of Pakistani Banks

The SBP's Banking Statistics of Pakistan (given previously in this section) actually illustrate that Pakistani banks have performed admirably and that their function has expanded significantly in terms of assets, deposits, and loans. During times of calm, however, many market players, including banks, become inattentive to detect, evaluate, analyze, and manage risk, according to Minsky (1982). Several possible hazards are overestimated and poorly hedged as a result of a myopic emphasis on short-term success and a lack of good risk management. Ineffective risk management may lead to a bank's failure or, in the worst-case scenario, the whole financial system (Kao et al., 2011; Abebi, Saba to and Schmidt, 2012). As a result, managing risk has become a cornerstone of sound banking, and its significance is growing with time, particularly in light of previous global financial crises (Scarborough, 2011).

Given the above, managing risk has become more important in the Pakistani context, not only to preserve competition but also to support the country's economic development (Nazir, Daniel and Nawaz, 2012). Because of their fundamental nature of trade, Pastor (1999) claims that banks, as part of the financial sector, put a greater emphasis on risk management in the economy than any other sector. Additionally, not only must financial institutions be efficient, but they must also be safe. As a result, a bank must be aware of its risk exposures and ensure that these risks are appropriately handled (Al-Tamimi and Al-Mazrooei, 2007).

1.3 Financial Risk Management (FRM) of Banks

The FRM is a technique by which a company attempts to reduce the adverse consequences that are projected to occur as a result of uncertainty. Because the fundamental and basic goal of bank managers is to grow the wealth of shareholders, banks are exposed to a variety of challenges that might damage their performance and operations. To achieve this goal, bank managers employ a variety of risk management approaches and procedures.

FRM is an investment decision-making system for identifying, evaluating, and recognizing or minimizing unpredictability. Risk management is known as the process by which an individual or portfolio manager evaluates and attempts to assess the potential for expected losses in an investment, and then takes the required steps to accomplish his investment goals (Jeniffer, 2014).

The world had one of the most spectacular economic failures in the previous few years. The consequences of this economic disaster were widespread, affecting practically every area of the global economy. The financial services business, which includes the banking industry, was the industry that was most affected by the financial crisis. Aside from that, the banking industry is facing tougher restrictions, academic criticism, and public ire. The causes of the current financial crisis can be explained in a variety of ways. During the crisis, the component of risk control discourse received a great deal of attention. As a result, good risk management is a crucial instrument for banks to gain public and regulatory acceptance (Kithinji, 2010). Risk, as per Izhar, (2010), is an unforeseeable and uncontrollable upcoming activities that can obstruct an organization's ability to achieve its goals. This circumstance can also arise due to a variety of factors such as a lack of statistics, uncertainty, and global economic situations, among others. As a result, it considers both positive and negative effects on corporate objectives. Although all companies encounter uncertainty, financial institutions face a unique sort of risk that is essential to their activities.

In the global banking business, the Basel Accords have largely been implemented by all active banks throughout the world for identifying, reporting, and displaying operational, market, and credit risks. In order to assess and manage modern and practical financial risks at a business level, a FRM must first identify the potential risk, then evaluate the possible remedies before taking the necessary steps to mitigate that risk. A typical method of overcoming these concerns is to use positive financial instruments as a way of neutralizing any repercussions. FRM is vital for firms, but it cannot consistently prevent them from all identified dangers because certain threats are unanticipated and difficult to detect (Maniagi, 2018). As risk management components expand, the major purpose of FRM execution is to control the overall financial industry's efficiency. As a result, regulators can screen the system and devise ways to mitigate any stress that may be identified. As a result, the company is able to achieve total financial stability.

1.4 Basel Acord History

The origins of the Basel accord system may be traced back to financial market disorder, which was followed by the breakdown of the Bretton Woods system, which was created in 1973 to manage exchange rates. The failure of the "Bretton Wood" accord resulted in massive foreign currency

losses for a significant number of banks. Following an examination that foreign exchange of banks had experienced losses three times bigger than their capital, the reserve banking regulatory office in Germany cancelled “Bankhaus Herstatt's” banking license in June 1974. Banks operating outside of Germany suffered enormous losses as a result of their unresolved deals with Herstatt. New York's "Frankling National Bank" also suffered significant losses and had to close its doors to new business (Bergess, 2012).

Following these international financial market disruptions, the governors of the G- countries agree to form a committee to regulate the banking system and other supervisory practices by the end of 1974. The goal of forming this group was to offer a venue for mutual collaboration in banking supervision among its member countries. This committee's name was later changed to the "Basel Committee (BC onwards) on Banking Supervision" (BCBS). The committee's main goal was to increase the quality of international banking supervision and ensure long-term financial stability through improving supervisory knowledge. To achieve its goals, the committee establishes basic criteria for bank management and regulatory authorities through exchanging methodologies and strategies to promote general awareness and supervisory issues. The committee assists in the detection of various types of risks associated with the banking sector, as well as the exchange of information to promote international financial market and banking system growth. The BCBS today has 28 participants who serve as committee members and represent their individual countries' reserve banks. (Salami, 2014).

1.5 Basel III

In response to the financial crisis of 2007-08, the Basel Accord-III was announced. The Basel Committee has released a number of publications on the repercussions of the financial crisis, with the goal of recognizing the effects of the financial crisis on the global financial system, as well as the banking industry in particular. The main causes of the financial and economic crisis of 2007-08, according to BC analyses, were a lack of capital, on- and off-balance sheet assets, and insufficient solvency ratio, which rendered the financial system was unable respond to systemic risk. Basel III announced many regulatory changes and improvements in response to the crisis. The Basel agreement's goals were to create stable international bank capital, increase liquidity, and

encourage risk valuation approaches. To accomplish this, the Basel committee devised several leverage and liquidity ratios (Ahmed Elbadry, 2016).

According to Masood & Fry, (2011), the major focus of Basel III is on change in the financial sector and enhancements in three core areas: liquidity, bank capital, and leverage ratios. The primary purpose of Basel III is to increase bank liquidity ratios. Basel III establishes two types of liquidity ratios to ensure that banks have sufficient liquid assets to meet both long and short-term obligations. The liquidity coverage ratio (LCR) can be used to pay short-term obligations, and it's described as the bank's cash outflow demand for the next 30 days in the form of the most liquid asset to deal with the problem. When paying long-term liabilities, banks should maintain the Net Stable Funding Ratio (NSFR), which is viewed as a reliable source of funding for banks. Second, the Basel committee focuses on increasing the visibility, quality, and amount of regulatory capital, as well as incorporating other critical criteria into the banking financing models for controlling systematic risk. Third, the ratio of Tier-1 capital to total assets has been given more weight in Basel-III. Equity capital should be equal to 3% of a bank's total assets, according to the BC's standards.

1.4 Broad Problem Area

Banks are closely related to the development of the economy. The banking sector is regarded as the lifeblood of the economy and a vital source of funding for the country's development. Banks have a long-term association with economic prosperity. Similar to the association between income diversity and bank risk, there are multiple differences and no consensus. Combining traditional and NII firms, according to a few studies, can provide a diversification effect, minimizing bank risk. On the contrary, numerous research' analytical findings demonstrate that income diversification is positively connected to income volatility.

Existing literature on the influence of income diversity on bank risk has mostly relied on banks in the USA and a few European nations. Other countries, such as Pakistan, are the subject of few studies. In such a changing environment, commercial banks' income pattern has shifted dramatically in recent years. What impact does this shift have on bank risk, and how and why? This is an extremely important topic. The purpose of this study is to provide an answer to that

question. Pakistan's banks are facing major financial and credit concerns as a result of the oil crisis and recession in the country's economy.

1.4 Research Objectives

1. To assess the influence of income diversification on the risk of a bank
2. To measure the impact of banks quality asset portfolio on bank’s risk
3. To infer policy insight for managers and policymakers to mitigate bank’s risk

1.5 Research questions

RQ1: Does income diversification impact on bank’s risk?

RQ2: How do banks' quality asset portfolios impact the bank’s risk?

RQ3: What policy insights can be inferred for managers and policymakers to mitigate bank’s risk?

CHAPTER 2

LITERATURE REVIEW

2.0 Literature Review

2.1 Theoretical Literature

Every country in the world strives for a developing and sustainable economy. A sustainable economy raises a country's level of living through providing money and jobs, fostering the development of new knowledge and technology, and promoting political stability.

Income diversification can theoretically be viewed through the resource-based perspective theory and the risk mitigation concept. Diversification may be linked to a bank's productivity and risk mitigation, as cooperative provision of a wide range of financial activities should raise efficiency as economies of scale grow. (Klein & Saidenberg, 2010). Having more resources and improving efficiency and productivity should help the bank function better. Diversification, on the other hand, leads to lower risk and more manageable income in the risk reduction theory. If capital markets become more integrated, diversification may be reduced. For example, if the loan, mortgage, capital, and money markets are all interconnected, there is no additional risk adjusted return for banks to diversify.

In a corporate setting, diversification entails varying the tentacles of production to enhance the methods of revenue creation. It entails delving into the manufacturing of products other than the normal ones for which a body is known in order to reduce the body's sensitivity to the dangers associated with generating money through a single source. Diversification does not eliminate the previous sources of income. Instead, it seeks out new sources of income to help alleviate the burden that the old sources of income are bearing.

How much risk is included in my investment, for example, is a fundamental concern in the thinking of an investor. Investors that are conservative, moderate, or aggressive tolerate varying levels of risk, and their investing portfolios should reflect this. The degree of diversification in an investment portfolio is important to know because it determines how hazardous the investment is.

Having a portfolio of strongly positively linked equities, for example, is riskier than holding a portfolio of non - overlapping stocks.

A further aspect that raises the risk is owning a stock that is acting strangely. The concept of contestable markets has been applied to a variety of empirical competition assessments in the finance industry. The criterion of broad market equilibrium is used in Bresnahan's (1989) model. The primary premise is that profit-maximizing enterprises will set prices and quantities in equilibrium so that marginal costs equal perceived marginal revenue, which corresponds to the demand price in perfectly competitive or the industry's marginal revenue in ideal cooperation. This allows for the calculation of a parameter that represents the degree of perfect market, ranging from perfect to complete market dominance. One experimental advantage is that, regardless of the fact that bank-specific data can be employed, just sector-wide records are required to estimate this parameter.

In recent years, there has been a lot of interest in the overall performance of the banking sector. In general, existing investigation have identified two distinct methodologies, namely the dealership and/or the firm theoretic strategy. On the one hand, the dealership method, (Saunders et al., 2000) views banks as dynamic dealers who set interest rates on loans and deposits to balance the antisymmetric arrival of lending requirements and deposit elements.

However, the firm theoretical model proposed by Klein (1971) and Monti (1972) in the beginning views financial institutions in a stable context in which demand and supply of lending clear each market simultaneously. Moreover, the dealer approach assumes that banks' practices are similar regardless of ownership and that their business strategies are subject to a set of profitability determinants; however, this belief appears to be incorrect, particularly for developing countries that have consistently embraced financial sector and economic reforms. To overcome these flaws, a number of research on the empirical specification of the dealership technique use dummy variables in their estimation models to quantify the impact of bank ownership (Micco et al., 2007)

2.2 Theoretical Literature

2.2.1. Overview of Theories on Income Diversification

Numerous concepts were presented to analyze the effects of bank diversification on banks' productivity, risk, and effectiveness, and whether this has a substantial effect. Diversification can be viewed as an important reaction to company instability (Meng et al., 2018 and Boot, 2003). As

a result, the majority of research in this sector is based on current portfolio theory and reveals a risk segregation impact, implying that the diversification effect on bank efficiency is positive. Diversification can also assist banks to gain advantages via greater informative benefits (Akhigbe & Stevenson, 2010), higher market power (Palich et al., 2000), and economies of scale, according to various experts (Drucker & Puri, 2008). Other researchers argue that there is a diversification rebate, in which the rewards of portfolio theory are reduced by informational asymmetries (Shen & Lee, 2006), Systemic risk and agency problems (Freixas et al., 2007), rent-seeking behavioral tendencies (Datta et al., 2009), increased market competitiveness, and bilateral breakdown in the event of a financial crisis are all factors to consider (Acharya et al., 2006)Finally, due to the learn-by-doing effect, diversification may have a causal relationship with bank profitability.

2.2.2. Theory of Modern Portfolio

The most regularly used theory to justify banks' diversification efforts, modern portfolio theory (MPT), argues that increasing the ratio of NII may lessen the risk. According to MPT, banks' income fluctuation is negatively impacted by focused revenue sources, and an ID approach could provide a coinsurance effect ((Tong, 2012). According to Shim and Mooney (2015), the reinsurance effect decreases the risk of future revenues for diverse banks and makes conglomerates less sensitive to risk-taking by individual firms. As a result, banks should diversify their portfolios to increase their stability and disperse risk exposure. Furthermore, as Ibragimov et al., (2011) contend, the MPT proposes that each bank might construct a shared common market portfolio, in which each bank contributes its risky portfolio to the total and receives a comparable share of the total. Various stochastic risks within individual portfolios would be removed if there was a significant range of risk categories. As a result, the banking system would be more resilient and effective.

Significantly, past research suggests that, in addition to reducing the risk, NII and interest earnings can be jointly advantageous in a portfolio (Pennathur et al., 2012). According to Stiroh, (2004), the lending business allows banks to draw customers to their NII and operations because users are more inclined to seek service charge services from a similar bank. According to Wagner, (2010), banks are eager to implement a system that incorporates appealing lending and deposit rates with high-return NII to increase customer loyalty and profitability. As a result, traditional practices might provide greater and necessary clients for high-return NII , while NII activities could promote

bank development and meet customers' financial needs, hence increasing customer loyalty (Lepetit et al., 2008)

2.2.3. Theory of Resource Bases View

Based on Coase and Williamson's (1975) transaction cost theory, and several other studies have argued that greater the size and forms of commercial financial products available through the formation of financial organizations may help businesses handle a range of financial problems. Agglomeration, specifically, may be able to help member companies create an internal capital market and overcome market flaws that are prevalent in advanced economies (William P. Wan, 2005). As a consequence, for banks starting on a diversification strategy, resource integration is a critical issue.

The resource-based view (RBV) (Penrose, 1959) highlights the importance of oligopoly activity and inter-firm competition in resource integration (Pitelis, 2007). However, as (Weston, 1970) argues, a variety of companies may improve their productivity by gaining access to an internal capital market and directing resources toward higher profit goals, a process known as "winner-picking" (Lamont, 1997). This kind of winner-take-all effect may encourage banks to redeploy internal resources from less lucrative to more productive areas (Stein, 1997).

2.2.4. Scale Based Theory of Economies

Increasing NII may assist banks to achieve operational synergies, according to Tufano's, (1995) economies of scale-based theory (ESBT) (Rezitis, 2008). According to Drucker & Puri, (2008), banks' structure is primarily responsible for NII development; as a result, a diverse business line approach may assist banks in spreading fixed expenses and administrative overheads over a broader product offering Klein & Saidenberg, (2010) further indicate that by separating contracts amongst financial intermediaries under diverse banks to share infrastructure and technological advancement, and cost can be decreased, while bank profitability can be improved. Furthermore, scale economies could eventually lead to financial efficiencies, as cross-selling approach firms that invest in mergers or acquisitions with fully grown banking institutions could communicate monitoring, marketing, and classic management, lowering operational costs and financial friction while enhancing bank profitability (Elyasiani & Wang, 2012).

2.2.5. Agency Theory

The agency problem is caused by a conflict between ownership and management. (Kazemian & Sanusi, 2015). Complex business lines, according to Jensen (1986) and Vogt (1994), lead financial organizations to over-invest in negative NPV projects as compared to single-business companies, especially when managers have excessive managerial control and large free cash flows. That is, instead of increasing the cash distribution to shareholders, managers choose to invest extra cash flow to enhance income, and this behavior tends to degrade banks' performance and erode shareholder value. This is especially true in economies with little regulation, such as Pakistan's, which also have a highly centralized management style. In this situation, (Freixas et al., 2007) speculate that managers may take advantage of deposit insurance to refinance investment banking and other high-risk activities, potentially putting the entire banking system at risk.

In terms of the diversification-risk impact, the shareholders' value can be thought of as a call option on the firm's worth executed when the value of the assets exceeds the debt claim (van Lelyveld & Knot, 2009). The value of shareholders would fall under the condition of risk minimization. Moreover, whereas a firm may diversify away its investment risk by developing diversified portfolios, administrators cannot diversify away their employment risk, such as reputation and career and job losses, according to Amihud and Lev's (1981) organizational risk reduction theory. As a result, managers will naturally prefer for cross-selling strategies, which will boost their job security at the expense of shareholders' preferences and efficiency.

Managers who want to increase the company's dependency on them and therefore reinforce their own status are more likely to use cross-selling strategies and invest above the company value threshold, according to managerial entrenchment theory (Shleifer and Vishny, 1989). This is due to the difficulty of external investors overseeing a complicated mix of company lines, and there will be few candidates available to take over the manager's role in such a conditions (Scharfstein & Stein, 2000). Foreign investors' objectives will be affected even more if those executives have too much control over the bank's operations as a result of higher bonuses and the expansion of more profitable NII activities (Scharfstein & Stein, 2000). Over-diversification can lead to inefficient portfolio building and internal bank operating confusion. (Elyasiani & Deng, 2008)

2.2.6. Stewardship Theory

The widespread consensus is that better quality resource control by managers is the key to high-performing banks around the world. Several studies in the banking system of the United States have confirmed this (Stiroh & Rumble, 2006).

The stewardship idea is another concept that explains why there is a viable relationship between bank size and bank stability. According to this idea, managers are essential members of an organizational structure because they are entrusted with carrying out the top hierarchy's intentions and hence are not subject to misappropriating the company's resources (Donaldson & Davis, 1991). According to the theory, managers are non-financial motivators, and that company managers are motivated by the desire to succeed, to gain intrinsic pleasure through successful execution of intrinsically difficult work, and to exercise responsibility and authority, for which they are rewarded by the credibility of peer group and chief execs. It goes on to say that company executives believe they will stay with the company for a long time, and as a result, the firm's structures are built to help guide the organization. This allows the manager's ego and the corporation to work together, integrating personal self-esteem and corporate standing.

While it is necessary for a top governance to choose a plan of action that is personally unrewarding, they are more likely to pursue it out of a sense of obligation, according to the concept. Even if they do not own stock in the company, when a manager recognizes that their future fortunes are inextricably linked to their current employers due to an expectation of future employment or pension entitlements, they will regard their interests as aligned with the company and its owners. In essence, the stewardship notion states that corporate executives have no internal motivational concerns because they aspire to achieve desirable economic outcomes. A productivity variety, according to the concept, arises from the structural circumstances in which top executives find themselves. Expect effective corporate governance from firm executives if the structural situation is supportive. The question of whether the organizational structure encourages managers to design and execute high-performance strategies comes up regularly. Structures steer goals by establishing clear, consistent expectations and authorizing and empowering senior leadership. (Donaldson & Davis, 1991). In a nutshell, stewardship theory shows that growing in size suggests structural convenience, which could lead to increased stability. In light of this, it is acceptable to assume that

the stewardship hypothesis predicts a relationship between financial institutions and capital adequacy.

2.3 Empirical Evidence

Earlier studies on bank ID have mostly focused on the advantages of diversity. There are three elements to the linked literature. The first is if ID can provide a scale economy since it offers consumers a wider variety of financial goods and services. The second concern is the link between ID and operational performance. The final topic is the connection between identification, asset portfolio quality, and financial leverage.

Banks have been seen moving away from simply overall banking operations and into new products or services that provide service charges and revenues from the commission in recent years. In this respect, the research offers contradictory data on the variables that predict banks' non-interest revenue. The factors of the NII of Pakistani banks are investigated in this research. Size of Bank, ownership, capital adequacy ratio, NII, loan to assets ratio, implicit interest payment, and management efficiency are all important. According to the findings. Furthermore, market concentration, interest rate policy, and real gross domestic product all have a major impact on the identity of Pakistani banking companies. Foreign banks generate higher NII than domestic banks, whereas domestic banks concentrate on their traditional intermediation role. This financial intermediation, on the other hand, allows these banks to provide service charge goods to both lenders and depositors, which generate NII. Authorities should think about the variables that promote market competitiveness (Yaqoob et al., 2020).

The influence of ID and the interest rate on the efficacy of monetary policy is investigated in this research. This research analyses the connection between monetary policy efficacy and bank ID using data from Pakistan's banking industry. According to the findings, bank diversification improves the impact of monetary policy. The dependent variable in this research is monetary policy, which has loan growth as its primary component, and the independent variable is bank diversification, which has four key factors: equity, liquidity, size, and diversification. The interest rate is used as an interaction term to describe how the connection between an independent and dependent variable is moderated. Monetary policy has many effects on the economy. For example, it influences the money supply in an economy, which determines lending rates and inflation.

According to the findings of the research, bank lending may be influenced by monetary policy. The influence of bank ID on the effect of monetary policy is investigated using Panel Regression (Fixed Effect Model), correlation, and descriptive statistics. This study's findings reveal a weak negative cant connection between monetary policy and bank diversification, implying that restrictive monetary policy has a greater impact on banks with diverse assets. These findings indicate that when a bank becomes more diverse, it reduces its lending portfolio (Sana Zulfiqar, 2019).

The purpose of this study is to look at the impacts of revenue diversification on a bank's profitability as well as the impact of the move away from interest-based income. We utilized a sample of 275 banks from fourteen MENA nations from 1990 to 2011 to do so. Diversification, as a whole, increases financial performance, according to the model estimate utilizing the GMM method. We also divided the NII and discovered that trading-generating business lines had the greatest impact on improving profitability and stability. Because of the greater financial distress, engaging in NII operations increases the benefit-cost trade-off of diversification. On the one hand, our results indicate that participating in non-traditional operations boosts bank profits. Increased dependence on commissions, fees, and other non-interest revenue-generating activities, on the other hand, has an adverse effect on bank stability and sustainability. The breakdown of non-interest revenue shows that diversifying into trading-related business lines has the greatest stabilizing impact on bank earnings and enhances market liquidity (Ammar & Boughrara, 2019).

The research used panel data from ten Ghanaian banks from 2006 to 2016. The fixed and random effect estimate approaches are used in this study. While greater diversification, as measured by NII, is linked with better banks' profitability in Ghana, the impact is not strong, according to the research. Furthermore, the impact of ID on profitability seems to be monotonic, with no indication of threshold effects. On the manifestation channels, the research finds that revenue diversification boosts profitability and non-performing loans amplify the favorable connection between non-interest income and profitability. We suggest that banks boost their revenue diversification efforts to optimize performance in light of banks diversifying their sources of income (Amoah, 2019)

The effect of ID on risk-adjusted returns of commercial and investment banks in Nepal is examined in this research. Risk-adjusted return on assets (RAROA) and risk-adjusted return on equity (RAROE) are two metrics used to assess risk-adjusted profitability (RAROE). The Herfindahl

Hirschman Index (HHI), equity multiplier, NII, and foreign ownership all have a substantial beneficial effect on commercial banks' RAROE, according to the regression study. The size of commercial banks, on the other hand, has a substantial adverse effect on RAROE. In the case of commercial banks, HHI and NII have a substantial beneficial effect on RAROA. RAROA is also negatively impacted by the size of commercial banks. The debt ratio has no strong influence on RAROE in the banking sector, whereas the equity multiplier, debt ratio, and foreign holdings have no substantial impact on RAROA in commercial banks. The HHI and equity multiplier have a substantial beneficial effect on development banks' RAROE, according to regression research. The research finds that income diversification, NII, and financial institution size are the most important drivers of capital appreciation (Prajapati & Shah, 2019).

The research was conducted by examining how ID impacts productivity in the banking industry of china. According to the findings, a diversity premium exists in China's banking sector, implying that a shift from traditional banking to diverse business units has a negative influence on bank profitability. For the dynamic threshold panel data model, the first-differenced GMM predictor was used. As per the findings, there is a negative U-shaped interaction among both diversity and risk in China's banking system. Only when a specific level of income diversity has been reached can income diversification decrease bank risk. The learn-by-doing effect and the alleviation of agency issues, which arise from the growth of NII, seem to be driving this pattern of connection (Qu, 2018).

The goal of this study is to look at the effect of ID as a structural response to concentration risk on bank's profitability in BRICS nations. According to scholars, the success of this method is dependent on its scope and quality. The authors investigate this connection across asset sizes to assess the impact of firm-specific factors on diversification effectiveness. Over the period 2001–2015, an imbalanced panel data set of 169 BRICS banks is sampled. To evaluate the connection between diversity and bank performance using alternative metrics, fixed effect models and system generalized method of moments methods are utilized. For medium and big banks, the results show a favorable connection between diversity and performance evaluated in terms of bank risk and returns. However, this connection is negative for small banks, implying a "diversification premium." Diversification is a risk mitigation strategy that may be beneficial, according to the research, but management and legislators should not rely on a “one-size-fits-all” approach for all

banks. Regulatory agencies for reducing concentration risk should be created with variables such as bank size, client base, and leverage ratio in mind since they all affect a bank's risk profile (Sharma & Anand, 2018).

This article contributes to the continuing discussion about the advantages and disadvantages of bank income diversification. If diversified operations are intrinsically less hazardous and have high returns, ID may help banks; but, if diverse operations are more dangerous and have poor returns, ID may harm banks. We discovered that overall ID toward NII had a beneficial impact on the profitability and stability of South Asian commercial banks after researching a panel data set of 200 commercial banks from all South Asian countries. We also found that different types of NII-generating activities had different impacts on bank performance and stability. While fees and commission income have a negative impact on the revenues and profits of South Asian financial institutions, another NII has a positive impact. Our findings show that banks could benefit from ID if they expand into specific types of NII-generating enterprises. Our results are reliable and applicable to the application of alternative income diversification, efficiency, and stabilization strategies (Nisar et al., 2018).

The impacts of ID patterns on banking industry risk in China are investigated in this study. Between 2006 and 2016, we collected 1111 samples from 101 different Chinese banks (big and small). To assess the diversified income of the Chinese commercial banking industry's impact on risk, a two-step method called the Generalized Method of Moments is used, which does not need to know the precise distribution information of the random error component. The final findings indicate that when the proportion of non-interest revenue or the degree of diversification increases, the operational stability of China's banking sector decreases. This is in stark contrast to earlier research that suggested a diversified approach may minimize banking risks. The regulators are given references from intermediary business and financial oversight (Wang & Lin, 2018).

Generating ID activities (whether interest-based or non-interest-based) may trading by lowering the total risk associated with banking operations. Over-reliance on income diversification, on the other hand, may raise risk and lower banks' risk-adjusted return. Given the significance of income diversity for strengthening financial markets, the goal of this research is to investigate the connection between ID and banking performance in Pakistan from 2006 to 2013. The study's findings revealed that income diversification had a favorable effect on bank performance in

Pakistan. The research is useful for bankers who want to learn more about how revenue diversity impacts bank performance. The results will also aid bank management and regulators in comprehending the significance of income diversification in value generation and risk reduction for all stakeholders (Ismail et al., 2015).

Interest margins for German universal banks have been shrinking in recent years. Simultaneously, institutions began to shift a portion of their revenue from interest to fee-earning operations. Between 1995 and 2007, This study investigates the drivers of NII and their effect on financial performance and risk profiles of German banks. Higher fee revenue activities favorably impact risk-adjusted earnings on total equity assets for all German universal banks, according to empirical data. Furthermore, we demonstrate that a high level of participation in fee-generating activities is associated with greater risk for financial institutions. We also look at how banks' growth into fee-based operations has impacted their interest margin to see whether there are any cross-subsidization impacts on both interest and fee business. When credit risk is managed by shareholders, we find that savings and commercial banks with a strong emphasis on the fee industry offer lower interest margins (Kick & Busch, 2009).

This study investigates the impact of the sector and geological diversity on Turkish bank profitability, attempting to demonstrate how diversifying impacts bank profitability. The research investigates whether banks benefit from diversification via industry and geological loans. Data from the Banking Regulation and Supervision Agency (BRSA), the Banks Association of Turkey (BAT), and the Istanbul Stock Exchange (ISE) were used to investigate the relationship between loan diversification and profitability of 50 Turkish banks between 2007 and 2011. It was unable to access certain bank data between 2007-2011 due to mergers and acquisitions and is closed. The data from 40 banks is analyzed in this way. ROA and ROE (are employed as performance indicators in this research, and the Herfindahl Index (HI) is used to assess bank diversity. The volume of credits and the volume of credits that banks enable borrowers to use are utilized as control variables. According to the findings of the study, Diversification is shown to explain the predictors variable ROA and ROE (Turkmen, 2012).

The goal of this research is to look at the factors that influence NII activities and ID in Pakistan. Generalized Least Square is performed to a panel data set of data of nineteen banks in Pakistan, including government, private, and foreign banks, over the period 2006 to 2012. To avoid

hazardous interest loans, empirical findings indicate a positive connection between decreasing loan quality and NII, indicating that banks are more inclined to boost profits from non-traditional sources. NII and enhanced profitability as calculated by advances to total assets are also positively linked, indicating the existence of cross-selling and loan origination fees, among other things. A positive relationship between size and non-interest revenue is also seen, as well as a positive relationship between the natural logarithm of total assets and non-interest income, indicating that banks with larger deposits and total assets are more likely to generate fee-based income. Furthermore, the findings indicate that NII and ROE are favorably related, whereas NII and ROA have a slight adverse connection. The findings indicate that when formulating policies, regulators should consider all of the variables that promote market competitiveness (Aslam et al., 2015).

The purpose of this study is to present exploratory data on the relationship between size, diversity, and risk in the Pakistani banking sector. We examined if either larger banks are more diverse than smaller banks using a panel of Pakistani banks. The findings indicated that bigger banks were more diverse than smaller banks, owing to their greater reach and loan portfolio size. On the risk side, we looked at whether diversity affected risk using accounting and market-based risk metrics. The study couldn't find a significant effect in favor of the financial measure of the risk of poor lending, indicating that banks aren't interested in diversifying their lending portfolios. Diversification was shown to be highly related to market-based indicators of VaR and Default index, implying that market players see diversification as a beneficial risk management strategy. To maintain sustainable economic growth, these results have policy implications for regulators and asset management (Afzal & Mirza, 2011).

The overall goal of this research is to see how revenue source diversity affects bank profitability. This research used a linear regression analysis to analyses data from three universal banks. The research found that in the Ghanaian banking sector, bank revenue sources are substantially diverse and that both interest and NII activities have a favorable effect on bank performance, while bank growth in the number of branches has an adverse influence. As a result, H1 was accepted, implying that commercial banks in Ghana are diverse in their sources of revenue, and H2 was accepted, implying that income source diversity enhances traditional bank profitability (Amediku, 2012).

2.4.1 Income Diversification Concept

Commercial banks have been progressively earning revenue from "off-balance-sheet" operations and fee revenues in recent years. According to Albertazzi & Gambacorta, (2011), the downward trend in profit rates has enabled organizations to diversify into other trading operations, numerous different service providers, and NII operations, resulting in diversification into financial transactions, other services, and non-traditional financial operations. Revenue diversifications are based on the idea of MPT, which says that diversifying one's portfolio may decrease firm-specific risk. In banking literature, however, there is a long history of arguments concerning the advantages and costs of diversity.

Diversification offers a steady and less variable revenue, scale economies, and the potential to leverage management efficiency beyond goods, according to promoters of activity diversification or product range (Kotrozo & Choi, 2006). According to Chiorazzo et al., (2008), activity diversification contributes to increased efficiency in banking organizations due to scale economies generated by joint production of financial operations. They also claimed that diversifying product range lowers overall risks even though NII operations are not directly linked, or at least not strongly linked, with revenue from service charge operations, and thus diversification should stabilize gross profit and produce more steady flow of revenues (Uzhegova, 2010). The argument against NII operations is that it raises agency costs, increases organization complications, and exposes bank management to risky conduct. NII operations, according to Kotrozo & Choi, (2006), lead to far more complex firms, which "makes it harder for top executives to oversee the conduct of the other segments." They went on to say that the advantages of scale economies are only beneficial up to a point. The expenses of a company's increasing complexity may outweigh the advantages of diversification. As a result, the advantages of diversity and its impact would approximate an upside down, with an optimum degree of diversification below which gains would continue to dwindle and eventually turned unfavorable.

Collecting yearly bank-level data from all banks in the Philippines Total NII split by asset value, a measure for i\ID and financial performance was shown to have a favorable relation by (Sufian & Habibullah, 2008). Uzhegova (2010) provided empirical evidence for the notion that banks engaged in diversification operations anticipate some advantages using an HH index of interest income, incentives, fee revenue, trading income, NII, and other operating income. Using a comparable score, Kotrozo & Choi, (2006) discovered that activity diversity reduces strength in

comparison to banks that are more concentrated in their operations. The primary goal of diversification is to reduce the risk of losing money. When making investments, banks often evaluate the costs and advantages of the many options available. Many studies have shown that portfolio investment strategy was the most significant choice that banks make, since these resources may lead to increase to 90% of bank profits Nafula, (2003) as cited by (Amediku, 2012).

Commercial banks that decide to engage in lending and advances the risk of defaulting on their investments. Although some of the loan portfolios to clients may wind up as dubious debts, such investments may have a negative impact on bank profits. Secured investments or high-interest rates may or may not be necessary to maintain this risk. If high borrowing rates cover the risk, they pay for the significant risks and expenses of evaluating collateral assets, negotiating, and debt service (Uzhegova, 2010). If a bank provides high quantities of lending without considering the ease of "shift ability" of other equity securities in its portfolio, this could suffer liquidity issues. Because the repayment options and durations for bank lending to clients are set by fixed agreements that vary from consumer to consumer, banks are unable to retrieve the cash in debt at their leisure or when liquidity is required. Clients may believe the bank does not have enough assets to fulfill their cash demands, which may lead to a bank run. If a bank's cash reserves fall below the levels needed for its demand deposits, it may be forced to collapse if clients suddenly make significant withdrawals. Customers' lack of trust in the bank causes a run on the bank, which has a negative impact on the bank's deposits and revenue (Kotrozo & Choi, 2006).

Financial institutions may opt to finance their surplus liquidity in government bonds as a portfolio to take advantage of the current high-interest rates on the bills, which are also risk-free. Government bonds carry a risk because of their fixed-interest structure, which means that once a bank invests in them, it cannot transfer them to take advantage of increasing interest rates until they mature. As a result, commercial banks react following their interest rate forecasts. If they predict interest rates on a certain earning asset to increase shortly, they save their money by investing it when interest rates have achieved their anticipated optimum level (Nafula, 2003). If they expect Government bond interest rates to decrease, they preferred to spend right away to prevent losing money when rates decline. This strategy has been proven to help banks achieve their profit maximization goal. Banks that prefer to retain all of their assets in cash have decided not to participate in any business activities. This currency does not generate interest or carry the

danger of default, but it does simply lose value if the "excesses of inflation" take hold. Furthermore, cash holdings indicate the bank's soundness. Clients will have confidence that their funds will be accessible whenever they need them if they deposit them. In reality, banks don't invest all of their funds in a single profitable asset. They rate their options in order of attractiveness and invest in all of the good options. Banks are more likely to accomplish their goal of profiting from their investments by doing so. The MPT of investment appears to be a good fit for dealing with the issue of financial risks that banks confront.

2.4.2 Classification of Diversification

Diversification involves diversifying revenue sources, expanding business perspectives, and expanding operating activities for a commercial bank. Diversification can be divided into three categories: assets diversification, geographic diversification, and ID, which have all evolved in response to technological advancements, regulation changes, and customer preferences (Deyoung & Rice, 2004). Diversification of resources refers to a lending portfolio having a variety of loan kinds. Geographic diversification refers to a bank's growth in terms of operational area, in which the bank establishes or acquires branches in different regions or countries and provides financial products and services in local or larger regions in order to achieve cross-regional or international activities (Meslier et al., 2014).

Finally, ID refers to bank acts that extend beyond the scope or range of a specific financial service. Banks' ability to provide clients with any or all of banking intermediation, securities, insurance, and trust services, as well as to breach the confines of conventional banking in product services, demonstrates this type of diversification (Schmid & Walter, 2009). Financial innovation can also be used to update and optimize credit operations, such as extending into intermediate firms, securitization, and various types of division within each core service. Thanks to ID, banks are no longer reliant on a single source of revenue, such as traditional NII. Instead, they increase non-interest operations and generate new revenue through a variety of business lines to diversify the income streams of diverse companies. This thesis focuses mostly on identification, with the goal of examining its consequences on Pakistan’s banks.

2.4.3 Income Diversification Channels

Banks in Pakistan now have two options for diversifying their activities. Big banks, eg, are more prefer to use the financial holding group model, which allows them to establish a cross-market and diversified financial operations platform by leveraging their scale, networks, and clients. By purchasing, owning, or creating financial leasing businesses, trust firms, fund management companies, insurance companies, and other non-bank financial institutions in both domestic and global market, banks offer platforms for non-traditional activity. In the meanwhile, financial firms may decide to enter the banking industry and establish financial firms.

Secondly, in the face of tight financial constraints, many small and medium financial institutions are focusing their efforts on collaborating with non-banking financial organizations such as trust, security, and fund insurance (Hachem & Song, 2017). The bank offers the issued wealth management products to investors, and the cash raised are given to the trust firm, according to a widely used pattern of bank-trust collaboration. The trust business then invests the monies in a bank-approved company. Since 2009, when restrictions governing such cooperation were strengthened, banks have begun to seek collaboration with other banking firms. The primary goal of bank security cooperation is to offload credit assets (mainly bill assets) from balance sheets. (Xu, 2017). To get past the Pakistani's regulator's loan-to-deposit ratio restriction and credit scale, banks employ wealth management funds to purchase asset management plans from securities companies, which they then use to deploy funds into permitted projects. In China, the Bancassurance collaboration is based on an agency sales model, in which banking institutions sell insurance policies for insurance companies in exchange for a fee.

2.4.4 Activities of Income Diversification

According to Pakistani legislation, banks' NII is separated into five categories: net fee and commission earnings, capital gains, fair value exchange income, exchange gains, and other business income. A large chunk of NII comes from fee-based operations, or money generated by charging clients for specific financial products. Subscription fees for individual and business trading accounts, commissions for home and business insurance coverage, membership fees for

the adoption and use of specific types of credit cards, and income from financial counselling services for individuals and corporations are just a few examples. Traditional financial institution business and services, such as check and savings account fees, machine usage fees, and fees and commissions for providing loans to customers, are split into two categories: traditional commercial bank business and services and nontraditional commercial bank business and services, such as fees and commissions for financial services.

In Pakistan, bank diversifying means that banks diversify their revenue sources and continue to expand their scope of financial services, increasing the proportion of NII in total revenue, for example, via insurance securities, collateralized debt obligations, and forex trading activities, as well as financial innovation and greater financial leverage.

2.4.5 Facets Influencing the Profit and Change in Income Structure of Banks

Since the mid-1980s, banking institutions' interest margins have been steadily decreasing. Globalization has expedited this development, and that has resulted in a fast expansion of international commerce, which has provided possibilities in the fee industry (Juttner & Gischer, 2003). As a result, to offset the negative trend in interest rates, commercial banks seek alternative sources of revenue (Hasan & Koetter, 2004). It has emerging markets for certain banks, especially in trading, portfolio management, and investment banking (Davis et al., 2000). Banks' NII operations have been harmed by the implementation of new standards and regulations (Basel I and Basel II). Because government regulations have influenced compliance and capital costs, banks must examine and price various assets on their books more carefully. In this respect, it is often claimed that the rise in off-balance-sheet operations seen in certain European nations is due mostly to reduced capital needs for off-balance-sheet goods, rather than on-balance sheet operations.

Furthermore, reduced inter-bank risk-weights contribute to an increase in this financial statement position. NII decreased since inter-bank lending has a smaller net interest income than lending to non-financial customers (Davis et al., 2000). In moreover, new kinds of bank operations arose as a result of growing customer demands. A greater majority of the respondents are investing in portfolios as a result of demographic shifts, rising personal wealth, and the anticipated decline in the pension plan. However, technology has changed (for example, automated teller machines and

internet payments are now more prevalent than they were years earlier), affecting the capital structure of banks (Hawtrey, 2003) as cited by (Amediku, 2012).

Ultimately, the costs of encoding and decoding data have come down. This has resulted in a more effective "supply" of financial data and improved risk evaluation and pricing methods, for instance. Many institutions have even specialized in credit risk management (as contractors rather than proprietors), for example, in the context of loan securitization, which boosts NII. The revenue structure and balance sheet of banks have been rearranged thanks to financial innovative products. In general, the ability to de-risk capital has resulted in a rise in off-balance sheet operations, since certain banks have been urged to participate in the securitization procedure by engaging in operations of investment banking (Davis et al., 2000).

2.4.6 Profitability and Diversification of Income

Based on ID, Elsas et al., (2010) examine how ID impacts bank valuation using panel data from 9 countries from 1996 to 2008. Despite studies of industrial companies, they find strong evidence versus a complex discount by relying on a thorough approach for the bank profit assessment process. Diversification, they said, boosts bank value and market values. Whether diversity was accomplished via sustainable growth or not has no bearing on this indirect performance impact. They also showed that prior findings focused on the effects of diversity on bank value are likely to vary owing to differences in how diversification is assessed and the neglect of the implicit value effect through financial performance. Landskroner et al., (2005) looked at diversity as a way to enhance earnings and operational excellence while also allowing the bank to build client trust. (Chiorazzo et al., 2008) explore the impact among both NII and revenue using yearly data from Italian banks. According to their findings, NII operations are often linked with increased revenue, but also with increased risk due to their inherently risky character. As banks become bigger, it was once again shown that diversification benefits had a limit. Small banks may benefit from higher NII, but only if they have a low NII share, to begin with.

Maudos, (2017) researched to see whether the revenue structure affects the risk and revenue of European banks. To do this, the author uses data from a panel of European banks to assess the revenue structure from 2002 to 2012. The research looks at if any differences between investment banks and banks specialize in lending in terms of the impact of income structure on financial risks

in financial intermediation. The results indicate that increasing non-interest revenue had a detrimental effect on profits, even if the effect was only substantial at one stage. However, when looking at the impact on each kind of banking company individually, the influence on interest banks is the most significant is unfavorable and substantial, but not in the case of banks with a more diverse business. A rise in NII was shown to raise risk, but the impact faded as the crisis progressed. Their study found that market power has a positive impact on financial sustainability.

Bapat & Sagar, (2016), on either hand, looked at the connection between ID and asset quality and bank earnings. They analyses data from 46 Indian public and private banks from 2006 to 2013. When contrasting public and private sector banks, they find substantial differences in diversification approaches. It was discovered that non-performing assets and return on assets had a negative connection. Diversification also has a favorable connection with return on assets, according to the findings. In their article, Acharya et al. (2006) looked at the impact of a bank's choice to diversify on its benefits and costs, using data from 105 Italian banks from 1993 to 1999. While our findings must be taken with care due to data constraints, they do indicate some consequences for the optimum size and scope of banks. Their results appear to report that a bank expanding into sectors with intense rivalry suffers economies of scale. To assess foreign diversification impacts, Fang & van Lelyveld, (2014) used a directly relevant correlation matrix method, in which bank subsidiaries were regarded as separate assets of the financial group portfolio. During the years 1992–2009, they adapted the approach to 49 of the world's biggest financial companies with substantial international business divisions. When it comes to the most important risk in the banking industry, credit risk, it was shown that allowing for ecological diversity may help banks decrease credit risk.

This research by Elyasiani & Wang, (2012) investigates whether diversity is linked to increased productivity. The Malmquist indices of productivity and the total factor productivity change for a sample of banks holding companies from 1997 to 2007 were calculated using Annual Time Series data. The study's first result was that technical efficiency is adversely linked with ID and that the impact is mainly driven by banks that have not witnessed diversification. On the other hand, although the degree of change in diversity over time is unrelated to total factor productivity, it is inversely related to technical efficiency. The study found that diversity is linked with poorer bank production efficiency on average.

2.4.7 Traditional and Non- Traditional Banking Operations

How would banks make a profit, according to Deyoung & Rice, (2004) in their essay how do banks make money? Put out the 3-6-3 rule, which states that banks pay a 3% interest rate on loans, collect a 6% on lending, and then go to the golf course at 3 p.m. Traditional banks' functions have been centered on the collecting of net interest revenue via two fundamental bank operations, namely the gathering of deposits on which banks pay interest and the issuing of credits for which they earn interest income, according to (Roland Craigwell, 2005)

Likewise, Anita, et al, (2010) as cited by Nurhastuti, (2019) discovered that banks are constantly seeking to improve their earnings; one strategic approach to do so is to diversify away from traditional sources of revenue, such as lending, and toward activities that generate NII, such as service charges, trading earnings, and other NII. According to (Jones and Wayne, 2014) as cited by (Nurhastuti, 2019), banks are constantly moving from net interest revenue to a numerous form of revenue known as NII, which may either promote financial security or instability relying on how the source is managed.

2.4.8 Non-Interest Income

Non-interest revenue, often known as transaction fees, is defined as a bank's profits that are not linked directly to generate from interest operations, such as delivery charges on deposit accounts, fiduciary income, and maintenance fees (Meier, 2011) as cited by (Nurhastuti, 2019).NII, according to (Peter and Sylvia, 2010), is described as income derived from activities other than loans and investments.

NII, according to Casu et al., (2006), is revenue produced via fees, royalties, and trading income, and it has grown in current years attributed to the rising focus on this type of income. Net NII is described as the variation between NII and non-interest expenditures, whereas net operating income is the summation of net interest income and NII (Lepetit et al., 2008). NII is often defined as bank and lender income generated mainly from fees. Deposit and transaction fees, insufficient funds (ISF) penalties, trading fees, monthly bank service costs, check and deposit slip charges are all examples of NII. As a means of generating money and guaranteeing liquidity in the case of increasing default rates, institutions impose fees that generate NII. NII accounts for a large part of all banks' earnings (Stiroh, 2004).

2.4.9 Components of NII

NII facets have been divided into sub-groups, such as securitization fees, investment banking and consulting fees, brokers' commissions, venture capital and fiduciary revenues, and profits on non-hedging contracts (Brunnermeier et al., 2019):. NII also includes operations like trading and securitization revenue, financial services and consulting fees, brokers' commissions, fiduciary earnings, and profits on non-hedging contracts, (Couto, 2002). According to Köhler, (2014), NII patterns vary per bank, with some banks earning just about all of their operating income from NII activities and others relying only on NII. This implies that the mix of NII varies significantly across banks, regions, and nations. NII was also divided into four categories by (Stiroh, 2004): fiduciary revenues, delivery charges, commercial revenue, and fees and other revenues. According to Bailey-tapper, (2010) NII components for Jamaican banks were studied, and NII was subdivided into service charges, transaction fees and commissions, dividends and trading earnings on securities, forex trading gains, and losses, and other revenues.

2.4.10 Risk Involved with Banks

2.4.10.1 Credit Risk

The credit risk (CR onward) is defined as the risk of suffering a loss as a consequence of debtors' failure to pay back the amount of loan according to the terms and conditions agreed upon. It refers to the possibility that the loan's lender will not receive the principal amount of the loan, as well as interest, affecting the firm's cash flow and increasing collection costs. To prevent any danger of loss, It's hard to forecast who will fail on a debt when it comes due. As a result, it is essential to adequately evaluate and control CR. A financial institution will evaluate a debtor's creditworthiness and capacity to pay back the debt before issuing a loan. Many businesses have a separate department whose job is to assess the creditworthiness of their customers and borrowers to repay the loan.

Credit risk is a method of calculating a borrower's probability of repayment based on his or her credit score. If an issuer presents a good credit rating to a lender, the lender will be more likely to grant the loan and claim a lower interest rate, When a debtor has a poor credit rating, the lender is less likely to approve the loan, and if they do, the interest rate will be considerably greater than when the debtor has a good credit rating. When it comes to consumer loans, the lender will assess the credit risk based on credit history, capital, repayment ability, loan term, and security. Before granting a loan to any borrower, financial institutions must ensure that these five criteria are met.

When forecasting a bank's profitability, the credit risk must be taken into account. CR is a variable used to assess bank efficiency since a significant number of studies, including those performed by the Federal Reserve, have used credit risk as an independent variable in measuring financial performance (Fauziah Hanim Tafri, Zarinah Hamid, Ahamed Kameel Mydin Meera, 2009); Muthii Wanjohi, (2017). For banks, the NPL ratio will be used as a proxy for credit risk. Because of the varied nature of the stakeholders impacted, credit is one of the many banking risks that have the potential to have a social effect. Credit risk must be managed since bankruptcies and failures impact a wide range of stakeholders, including shareholders, suppliers, clients/depositors, the corporate sector, the authorities, and government regulators. As a result, the performance of a bank is determined by the combination of strong and effective credit risk management methods accessible to banks. The current literature and related theories concur and suggest that as the percentage of non-performing loans rises, the firm's profitability would decline (NPLs). Based on the preceding explanation, it is reasonable to infer that bank profitability and non-performing loans have an adverse connection.

2.4.10.2 Market Risk

Market risk (MR onward), as per Mckins, is the risk of deficits in a bank's trading book as a result of fluctuations in stock prices, interest rates, credit spreads, forex rate increases, commodity prices, and other variables whose values are determined in a public market. The Bank for International Settlements (BIS) defines MR as the risk of on- or off-balance sheet positions failing as a result of market price fluctuations.

The level of risk that an investor assumes as a result of numerous variables that may influence the Capital markets' overall efficiency is known as market risk. Market risk is also known as systemic risk, and it is an uncontrolled risk since it is an external risk that has ramifications for the entire economy over which the company has no influence. Diversification cannot be used to remove market risk; consequently, additional methods such as hedging and constructing portfolios of various product types may be used to mitigate market risk. Market risk may be caused by a variety of factors, including market recession, interest rate fluctuations, natural disasters, and other unforeseeable occurrences such as terrorist attacks. Market risk is the cause of simultaneous changes in the whole market.

Foreign exchange risk, also known as currency risk, commodity risk, and interest rate risk are all examples of market risk. The exchange rate risk, also known as currency risk, is the risk that a company faces as a result of fluctuations in currency exchange rates. Changes in currency values will expose investors and other organizations with assets in foreign countries to risk. A business faces interest rate risk as a result of the uncertainty in its interest rates, which may vary suddenly owing to various reasons such as central bank monetary policy changes. Interest rate risk is mainly associated with investments in fixed income commodities, such as government bonds. Commodity risk may be defined as the risk of suffering a loss as a result of unanticipated changes in commodity prices, such as price fluctuations in oil products.

Financial institutions face a range of risks, according to Kithinji, (2010), including MR, liquidity risk, currency risk, credit risk, commodity risk, interest rate risk, and operational risk. Due to their nature, all of these risks are equally significant, necessitating constant bank monitoring. The market risk gets more attention from financial analysts, and as a consequence, it has to be managed correctly. Several factors, such as currency risk, commodity pricing, interest rate risk, and stock price risk, are used to forecast MR. The interest rate risk proxy will be utilized to assess market risk in this research. The market risk may be expressed in terms of an investor's expectation of a loss in their investment as a result of unstable market variables. In layman's terms, the IRR refers to the risk of losing the entire value of an investment owing to interest rate fluctuations in the market.

2.4.10.3 Operational Risk

Operational risk, according to the BIS, is the risk of loss arising from insufficient or failing internal systems, people, and systems, as well as external variables. Human factors or faults are more likely to cause operational risk in banks. Operational risk may arise as a result of erroneous data being entered while confirming or checking other financial information being exposed as a result of a system failure (Nurhastuti, 2019).

For a better understanding, the operational risk may be divided into three types.

- **Human risk:** refers to the possibility of failure as a result of a human mistake, whether deliberate or unintentional.
- **System risk:** refers to the possibility of financial loss as a result of system failures or technical mistakes.

- **Process risk:** includes the possibility of losses owing to incorrect information processing, data leakage or hacking, and data analysis inaccuracy.
-

2.4.10.4 Liquidity Risk

Liquidity refers to how readily a company's assets or shares may be bought or sold in the market, as well as liquidated. The danger of a bank or other financial institution is unable to meet its short-term financial commitments resulting in a lack of liquid resources is known as liquidity risk (LR onward). The risk of liquidity occurs when a company or person has an urgent need for cash and wants to meet that need by selling one of their assets. However, due to a shortage of purchasers in the market or unfavorable market circumstances, selling one of their assets at market price becomes challenging. LR is divided into two categories: market liquidity risk and financing LR.

The funding LR is concerned with a financial institution's ability to meet its short-term obligations. The current ratio, which is determined by dividing current assets by current liabilities, is the best illustration of financing or cash flow LR. The fast ratio, also known as the current ratio, is a better indicator of a company's financing liquidity. The illiquidity of organizational assets is referred to as market liquidity risk. When a bank or other business is not capable to exit a position, market liquidity risk develops. Consider the case of a real estate investment where a company wishes to realize its investment but market circumstances are adverse, even though the investment is valued but difficult to realize without losing capital value.

Liquidity risk may be calculated using the ratio of liquid assets to total deposits. . Other studies, such as (Fauziah Hanim Tafri,, 2009), have utilized this method to assess LR (Ahmadyan, 2018). This ratio compares a company's total most liquid assets to its total deposits (liability). The danger of not having enough cash and cash equivalents against investment to meet deposit and withdrawal obligations, as well as new lending requests, is referred to as the liquidity risk. When the bank's liquidity risk is not properly handled, it will be forced to borrow money in an emergency at a very high cost, which may cause severe problems. Liquidity risk has a negative relationship with bank performance because when a bank raises its cash or liquid holdings, the firm's asset holdings drop. Because liquidity risk is inversely proportional to bank performance, we may infer that if all other factors stay constant, a greater liquidity ratio will result in a lower liquidity risk.

2.4.10.5 Advantages of NII

Commercial banks utilize the idea of ID to reduce the uncertainty and unpredictability of their profits (Demsetz & Strahan, 1997). The connection between ID and profitability or performance has been experimentally modeled or researched in various nations all across the globe, although conflicting findings have been discovered.

Income diversity seems to have a good or adverse impact on bank productivity, risk, risk-return equilibrium, bank capital costs, and bank value ((Demsetz & Strahan, 1997) Numerous researches seem to focus heavily on the one-way street: the impact of revenue diversification on banks' profitability (Berger et al., 2009). The connection between non-interest activities and bank profitability has received little attention (Kick & Busch, 2009). There have been few empirical studies that explain why NII differs across banks or what variables accelerate the rate. Furthermore, empirical work highlights several additional variables that influence ID like a driving force. To obtain possible diversification advantages, banking firms offer a broad variety of financial goods and services (Stiroh & Rumble, 2006). Increasing profitability, reducing risk, and attaining economies of scale are just a few of the main benefits of ID Deyoung & Rice, (2004); Calmès & Théoret, 2010). Size, Risks, and Profitability are, as a result, possibly key reasons for diversification. The abovementioned proponents of income diversity pay special attention to the importance of income diversification from the following viewpoint.

2.4.10.5.1 Growing Stability of Banks

According to Chiorazzo et al., (2008), who examined the effect of ID on the performance of Italian banks, risk-adjusted return improves with increased ID through improving financial sustainability across time. Furthermore, they demonstrate that ID increases the big bank's risk-adjusted yield substantially. ID boosts a big bank's risk-adjusted return, but the advantages of NII diminish as the bank becomes larger. Similarly, Kohler (2013) discovered that diversity provides a healthy revenue structure and that diverse banks are less susceptible to economic shocks or instability since banks should not be too reliant on a single source of income. Furthermore, according to (Kohler, 2013, p.17), The impact of NII on risk has strongly relied on the activities used to generate it, with retail-oriented activities being much less risky than investment-oriented activities like capital markets.

2.4.10.5.2 Reduction of Risk

As per Stiroh, (2004), banks in the United States gain from ID by reducing risk by moving their revenue-generating operations from interest income to NII. Diversification helps to decrease the uncertainty, which is risk linked intrinsically with the asset or stocks itself (Leaven and Levine, 2009). However, the advantages and degree to which the diversification approach may be used are restricted due to its inability to curb or minimize systematic risk.

Besides that, Gorener, (2013)discover that ID into NII is only related to greater systematic risk, but the ability to postulate the riskiness of NII is severely limited because there is no evidential evidence to link NII to other types of risk such as credit risk, interest rate risk, etc. According to (Stiroh, 2001), diversification into NII causes banks to diversify away from conventional banking operations, lowering credit and interest risk levels. The researcher also added that diversification into NII may move banks' revenue balance toward fee-based operations, increasing portfolio diversification benefits by combining goods and services with various relationships.

2.4.10.5.3 Enhance Profitability

The effect of ID on 29 Asia Pacific nations is shown by Lee, Chien CLee, C. C., Hsieh, M. F., & Yang et al., (2014). ID has a favorable impact on bank performance in bank-based nations, according to their results. Furthermore, Maxwell, (2006) investigate the drivers of non-interest revenue diversification and its impact on bank's profitability in Barbados from 1985 to 2001. Their findings show that NII diversification has a beneficial impact on banks' profitability or profitability. Banks with more NII weight have higher profits, but it also increases the fluctuation of operational earnings and or revenue. As per Sun et al., (2017), who investigated the impact of NII diversification on Chinese commercial banks, the growing demand for financial services has resulted in a rise in NII, resulting in excellent performance for Chinese commercial banks. According to Gyamerah & Benjamin Amoah, (2015), who looked at the benefits of NII to shareholders and found that investing in banks with a high exposure to NII-generating activities benefits shareholders more since portfolio diversity is improved in terms of NII.

2.4.10.6 Disadvantages of NII Diversification

As per Demirgüç-Kunt & Huizinga, (2009), commercial banks with a greater focus on interest-income generating activities and deposit funding are safer than banks with elevated NII generation activities and investment via wholesale capital market during the economic crisis in 2008. Finally,

Demirgüç-Kunt & Huizinga, (2009) conclude that relying more heavily on non-deposit financing and non-interest revenue is a hazardous banking strategy.

In addition to the research mentioned above, Delpachitra & Lester, (2013) investigated the effect of NII diversification on the profitability of Australian banks and found that NII diversification had an adverse influence on business profitability. This means that relying too much on NII did not enhance profitability or the danger of bankruptcy. Furthermore, Turkmen & Yigit, (2012)found that sectoral and geographical diversity had a detrimental effect on performance indicators of Turkish banks. Interest income, according to Jonghe, (2011), is less hazardous than all other earnings streams. He also said that the various elements of NII, such as trading income, fees and commissions, and other operational income, are not substantially different from one another. Finally, he discovers that successful banks are those that concentrate on lending or conventional operations, so these banks are less sensitive to systematic risk than diverse banks.

As per Stiroh & Rumble, (2006), greater exposure to the NII operations, which are more unstable but not more lucrative than loan portfolios, offsets dependence on NII as a diversification strategy for financial holding companies (FHCs). Similarly, according to (Couto, 2002), the more a bank's revenue originates from sustainable core-business sources, the more dependable and consistent its profits are. Similarly, (Couto, 2002) shows that dependence on NII is an indication of earnings weakness and may indicate that the bank is engaged in hazardous activities to increase profits. According to the author, money generated through non-traditional banking operations is considered advantageous if it surpasses operating costs, provisions, and contributions to tax expenses. According to (Brunnermeier, et al., 2010), banks with a greater NII composition in proportion to overall operating revenue have a higher systemic risk than banks that do not depend on NII. The author uses a covariance proxy as a measure of systematic risk and finds a connection between one standard deviation from the NII and a 5.2 percent shift in systematic risk coefficient variance.

As per Williams and Rajaguru (2007), as cited by (Nurhastuti, 2019), banks with risk-averse administration avoid diversification into non-interest operations due to the unpredictable nature of that revenue stream process. Diversification is like shooting in the dark since income streams are unpredictable and difficult to monitor. The writer also identified interest revenue as a clear source of Earnings, with an example of how the impact of capital structure produced by credit losses can

be easily traced to the source: loan default, loan classification, loan provisioning, and loan charge-off. (Gorener, 2013).

2.5. Pakistani Banks and Risk Management

Burki and Niazi (2010) claim that owing to contemporary technology advancements, financial privatizations, and global market integration, Pakistan's banking industry has become more leveraged and hazardous. Banks in Pakistan are exposed to a wide range of financial as well as non-financial risks, including interest rate, LR, MR, operational, reputation, regulatory, and forex concerns, all of which may have an impact on their survival and performance (Shafique, Hussain and Hassan, 2013). To enhance banks' capacity to cope with a challenging environment, the SBP has set risk management standards.

These recommendations provide a comprehensive description of major risks to which banks may be exposed, as well as some basic principles for risk management for all banks, regardless of their complexities or size. Managing risk, according to these guidelines, entails identifying, measuring, supervising, and controlling risks to ensure that: all individuals who maintain or take risks have a clear understanding of different risks; the bank's risk exposures are within the board of directors' limits; and all risk-taking decisions are in line with the bank's activities and business approaches. In addition to issuing these recommendations, the SBP has developed a road map for banks to follow in order to improve their risk management systems and align them with best worldwide practices (Ishtiaq, 2015).

The SBP risk mitigation suggestions, on the other hand, are limited to providing a high-level perspective of all critical activities and are not intended to provide a full strategy for each control procedure that these institutions may undertake. According to Lopez (2003), identifying risk tolerance and scope is an important aspect of risk management. As a result, it's vital for banks to avoid taking any unnecessary risks in order to keep banking operations running smoothly. For this reason, a variety of factors must be examined when evaluating a bank's risk management strategy (Abu Hussain and Al-Ajmi, 2012). The research at hand does not cover certain other key elements of risk management in Pakistani banks, such as managing credit risk, managing market risk, managing liquidity risk, and managing operational risk, despite the SBP risk management guidelines.

2.6.1 Pakistani's Banks Performance and Risk Management

Managing risk is accurate and informative in order to enhance the firm's worth, in addition to being a legal obligation (Santomero, 1995; Oldfield and Santomero, 1997). Risk management, according to Gup and Kolari (2005), is critical for a bank's economic health. The use of risk management in banks leads to a better risk-return trade-off (Fatemi and Fooladi, 2006). Risk management, according to Essinger and Rosen (1991), is a helpful method for minimizing the negative impacts of different risks and optimizing returns in uncertain circumstances. In a subsequent research, Drzik (2005) backs up this claim, arguing that following the 1991 recession, banks invested in strengthening their risk management skills for credit, market, and interest rate risks, which allowed them to reduce the volatility of profits and losses during the 2001 recession. Cebenoyan and Strahan (2004) similarly find that banks that have used more sophisticated risk management methods have higher loan accessibility. This possibility enables them to increase both their productive assets and earnings.

According to Tandelilin et al. (2007), risk management is critical for protecting the bank's assets and the interests of its shareholders. They go on to say that banks with better risk management may benefit from a number of factors, including: I aligning the compliance function with the regularity requirements; (ii) improving bank reputation and increasing the opportunity to attract more customers, resulting in a larger bank portfolio of fund resources; and (iii) increasing the bank's efficiency and profitability. The application of risk management is essential for the functioning of financial institutions, according to the available research. The implementation of risk management, according to Fernando and Nimal (2014), is beneficial to improving the quality of Sri Lankan banks. Ariffin and Kassim (2011) find a significant link between productivity and mitigation measures in a group of Malaysian banks. In Nigerian banks, Oluwafemi et al. (2013) discover a strong link between performance and risk management. Kao et al. (2011) investigated the risk management performance of Taiwan financial holding firms and discovered a strong direct connection between research factors.

The discussion above demonstrates that there is a potential to undertake a specialized research in the field of bank risk management in Pakistan. As a result, the goal of this study is to fill in the gaps in the previous research by addressing the entire spectrum of risk variables and, in particular, evaluating the connection between risk strategy and profitability (Ishtiaq, 2015).

2.6.2 Pakistani Banks and Risk Management

Banks in Pakistan have a twofold impact: first, they play a critical role in the economy through supporting development initiatives. Secondly, banks make resources available to other corporate units as well as the general public (Shafiq and Nasr, 2010). In Pakistan, several kinds of banks operate, and the SBP supervises them all. Public banks, commercial banks, foreign banks, and specialist banks are among the many broad types of banks (Ahmed, 2008; Bagram, 2010). The state-owned banks are known as public sector banks. More than half (50%) of these banks' shares are owned by the government. Private Banks, on the other hand, are owned and operated for profit by people or corporations. Foreign banks are obligated to follow the laws and rules of both their home country and Pakistan, for example. Specialized banks, on the other hand, are government-owned and provide specialized services to a variety of industries, including manufacturing, small and medium-sized businesses, real estate, and agriculture (Ishtiaq, 2015).

2.6.3 Credit Risk Guidelines

The governance of the company for adopting a clear credit policy, according to the CR standards. The boards must approve their banks' CR approach, as well as key CR management regulations, which are based on their banks' overall business strategies. Bank management must not only design rules, processes, and protocols, but also an approved organizational structure to review, monitor, and control the CR. In addition, Pakistani banks must create an innovative credit risk management unit that is commensurate to the complexity and scale of the bank lending portfolio. The most important task in credit risk management is loan origination, which focuses on the appropriate evaluation of the lender's reputation, capability, objective, and liquidity position.

The use of a credit management function strengthens this feature even further. As per this role, Pakistani assures customers that their activities are compliant with their rules and procedures, that lending paperwork and credit records are preserved, and that loan covenants are followed. Banks are also being asked to build internal credit ratings and assign them to people based on their credit scores. Banks operating in Pakistan are obliged to review their loan portfolio on a regular basis and provide individual, cumulative, and sector-specific monthly reports. Finally, banks should devise strategies or framework for dealing with issue loans (Ishtiaq, 2015).

2.6.4 Market Risk Guidelines

The MR guidelines require the board of good corporate governance of banks to create an appropriate mechanism for MR management in order to cope with possible losses resulting from unfavorable changes in forex rates, interest rates, and stock or commodity prices. This framework includes an organizational structure that is not only in line with the size, breadth, and complexity of the company, but also with the strategies, methods, and processes for measuring, monitoring, controlling, or mitigating MR.

In order to create an independent market risk management unit, between the back and front office operations, Pakistani banks should create an intermediate office. As per the MR standards, the independent activity is responsible for identifying, measuring, and analyzing MR that are inherent in bank treasury operations, as well as reporting these risk exposures to senior management. It is also recommended that banks in Pakistan use a variety of methods to assess market risk, ranging from simple gap analysis to complex risk models, depending on their needs. Finally, local banks must ensure that they have enough control mechanisms in place, as well as relevant settings such as periodic reviews or audits, to monitor market risk (Ishtiaq, 2015).

2.6.5 Liquidity Risk Guidelines

The LR recommendations highlight the need for banks' senior management to establish a thorough system for identifying, evaluating, and controlling liquidity risk. The main requirements for effective LR management, according to these recommendations, are a well-informed board, qualified management and employees with the necessary expertise, and active processes. It is also directed that senior management establish an efficient framework to evaluate bank liquidity situations on a regular basis.

All financial institutions must develop a resourceful liquidity management strategy that takes into consideration both their overall and individual liquidity exposures based on various kinds of account holders or deposits. Banks are required to anticipate potential liquidity shortages and conduct periodic cash flow analyses under various market circumstances and scenarios for this purpose. Effective management information systems, a contingency financing plan, and risk limitations are proposed as important elements of a good liquidity management strategy in these recommendations (Ishtiaq, 2015).

2.6.6 Operation Risk Guidelines

The operational risk guidelines require financial organizations to consider a wide range of material operational risks affecting banking operations, including the risk of loss due by incompetence or inadequate internal processes, personnel, controls, and systems, as well as external occurrences. The directors are responsible for ensuring that their institutions' senior management has established adequate practices, techniques, regulations, and frameworks for all major areas of operations, as well as a risk tolerance level for operational risk. (Ishtiaq, 2015).

For this reason, every financial institution, regardless of its size or complexity, is required to follow six fundamental operational risk management principles. Moreover, top management of financial institutions must aggressively convey all established processes and standards down the line, as well as make appropriate preparations to offer necessary training to their affected employees. Finally, in order to offer a credible framework for evaluating their operational risk monitoring, all financial institutions must provide information on a timely manner. The SBP's risk management standards have aided financial institutions in developing an effective risk management strategy (Tahir, 2006). The banks have been urged to take the steps required to adopt risk management standards (Fayyaz, 2006). In 2005, the SBP created a framework for the management of the Basel Accords, with the aim of improving banks' risk management systems and integrating them with best global practices (Masood and Fry, 2012).

For banks' survival and success, the preceding definition of risk management principles shows that they must understand their risk exposures and implement a broad variety of risk management procedures. A numerous study in the field of risk controlling techniques have been performed for this purpose, and the following section offers a short overview of some pertinent research.

2.7 Study Hypothesis

H1: Income diversification significantly influence the Bank’s risk of Pakistan

H2: banks quality asset portfolio significantly influences Bank’s risk of Pakistan

2.8 Conceptual model

The conceptual model was created in order to better understand income diversity and its impact on bank risk in Pakistan. The model has a total of three variables, including a mix of dependent and independent variables. The standard deviation of return on assets will be used to calculate the dependent variable bank risk, while the value of the independent variable will be used to calculate

the value of the independent variable. The study's income diversification will be measured using proxies of Ratio of interest income= (Interest Income)/ Total Income) and the bank's loan portfolio will be measured using a proxy of NPL / Gross Advances*100, also known as CR. The study's control variables will be Total Assets, deposit, loans, and equity.

Conceptual Model

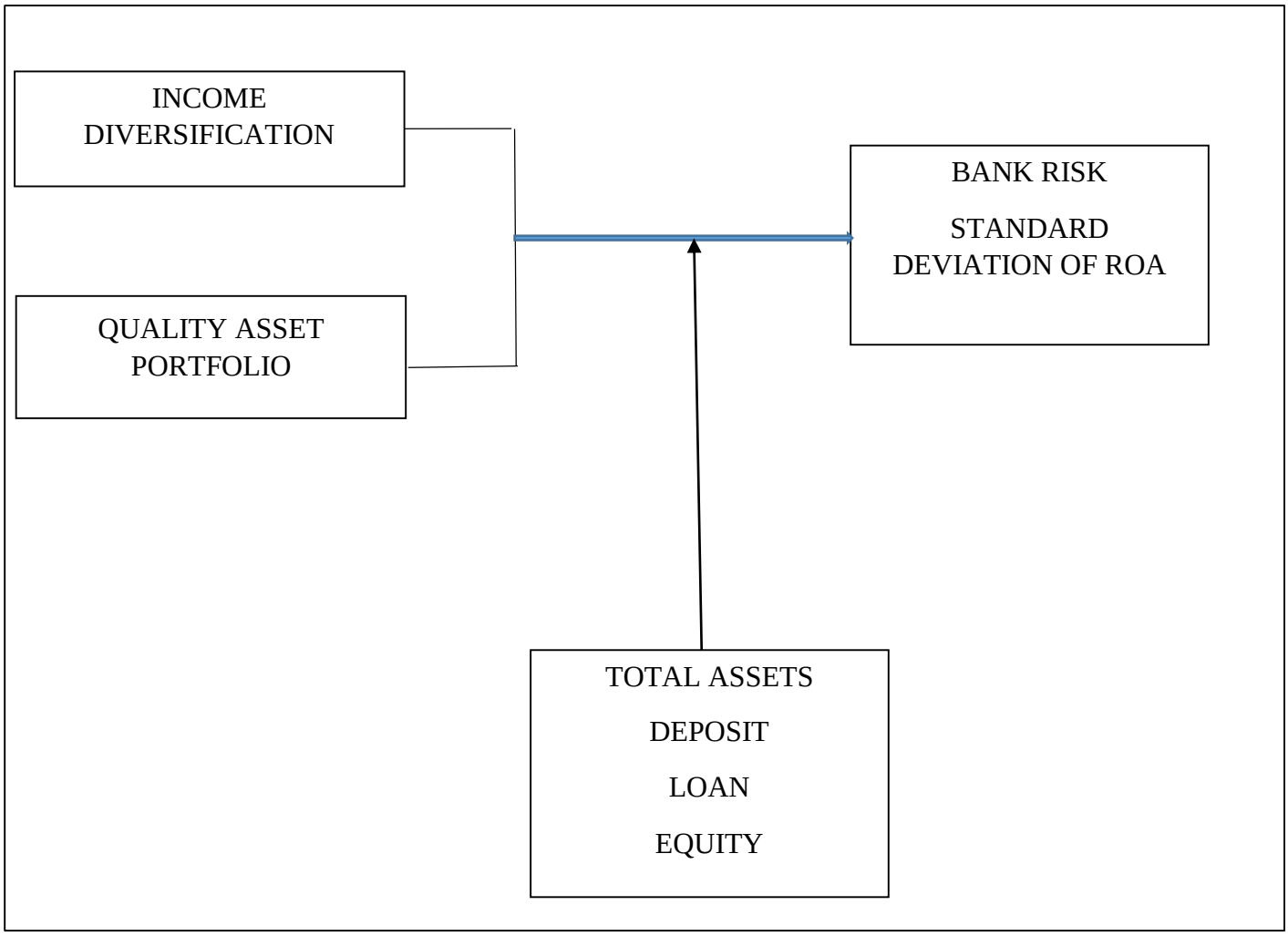


Fig.2. Conceptual Model of Pakistani Banks

CHAPTER 3

RESEARCH METHODOLOGY

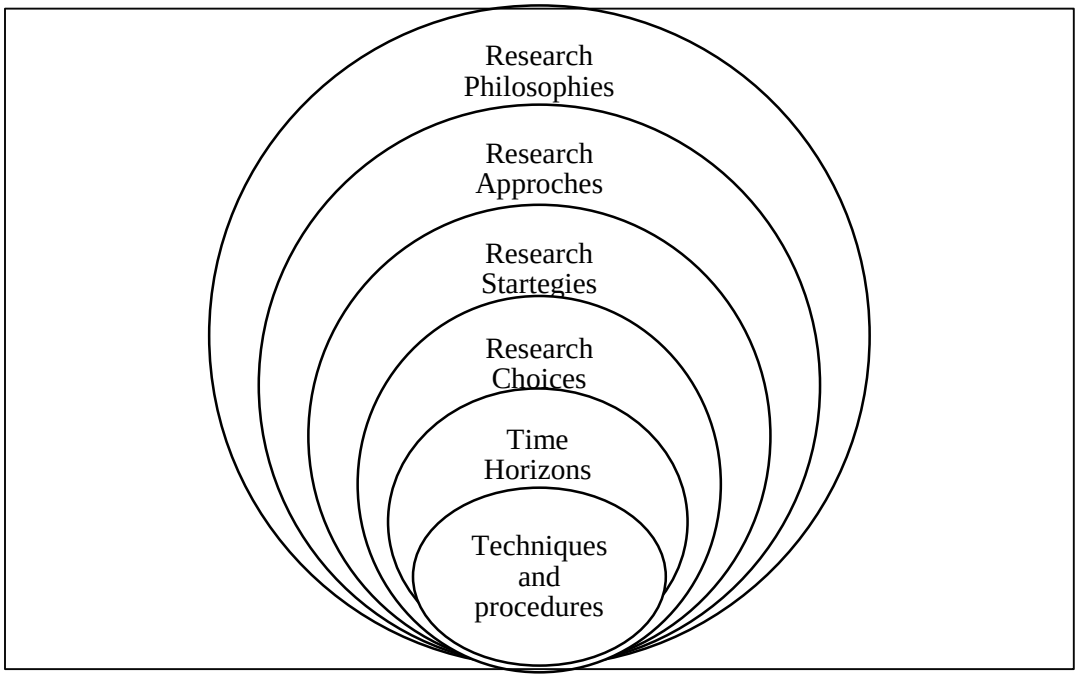
3.1 Introduction

This part of our research will go over several research methods that are necessary for performing this investigation. This section of the research will concentrate on all of the essential research methodologies, methods, and tools that must be used throughout the research process. These measurements will be used to accomplish the study's goal. This section of the course will look at the different statistical tools and methods that are used to address research issues. The study's hypothesis, which was established previously, will be evaluated here based on the study's findings.

3.2 Research process

The whole method for performing the study would be discussed in this part of the study. This study is being conducted to learn about various research philosophies, methods, tactics, and procedures for conducting a study. This research will describe the whole methodological approach using the research onion model defined by (Saunders, 2007).

Research Onion Model



According to Saunders, (2007), there are several stages that a scholar should take in a methodological approach, similar to peeling an onion, which reveals multiple layers. Similarly, there are many stages in research. First and foremost, a scholar should begin the study process with a fundamental philosophy in mind. Epistemology, Ontology, and Axiology are the three major research philosophies. These ideologies may be further divided into positivism, interpretivism, and realism, among other things. Scholars should attempt to address philosophy after they have created it.

The techniques of data collecting are regarded as an essential element of qualitative research in the research process. The data for a research project may come in a variety of formats, including primary data, secondary data, and data that is quantitative or qualitative. When you travel to the field and gather data via interviews, questionnaires, and schedules, you are collecting primary data. Secondary data, on either hand, is when you rely on data that has previously been collected by someone else for their personal need or objective. Secondary data contains information from numerous research papers, studies, and census data.

In this study, we prefer to employ robust regression because it is a simple way for dealing with outlier adjustment. Other approaches exist, however they do not accurately predict the outlier adjustment result. Scholars employed ordinary least square (OLS) together with the concept of robust regression to overcome the outlier adjustment problem by employing a variety of statistical techniques. To begin, we used robust regression and inserted all Z variables into it to determine the likely impact of each variable. The Huber model is a crucial choice for the residual with function.

$$\text{Huber Model} \begin{cases} \frac{X^2}{2} if|X| \leq c \\ c|X| - \frac{c^2}{2} otherwise \end{cases}$$

Taylor et al. (1977) found that the estimator achieves 95 percent asymptotically below residual normality. Second, we employ the MADMED (Median Absolute Deviation Median Centered) approach.

$$\text{MADMED, } \hat{\sigma}^{(\delta)} = Median\left[\frac{abs\left(r_i^{(\delta-1)} - Median\left[r_i^{(\delta-1)}\right]\right)}{0.675}\right]$$

$$R^2 = \frac{\sum_{i=1}^{N} P_c\left(\frac{y_i - \breve{\mu}}{\hat{\sigma}\omega_i}\right) - \sum_{i=1}^{N} P_c\left(\frac{\tau_i}{\hat{\sigma}\omega_i}\right)}{\sum_{i=1}^{N} P_c\left(\frac{y_i - \breve{\mu}}{\hat{\sigma}\omega_i}\right)}$$

The M-estimated Information Criterion is resilient in the same way as the AKaike Information Criterion and the robust Schwarz Information Criterion.

$$(BIC_R) : AIC_R = 2\sum_{i=1}^{N} P_c\left(\frac{r_i(\beta)}{\hat{\sigma}\omega_i}\right) + 2k\left\{\frac{\sum_{i=1}^{n} \varphi_c\left(\frac{r_i(\hat{\beta})}{\sigma\omega_i}\right)^2}{\sum_{i=1}^{n} \varphi_c\left(\frac{r_i(\hat{\beta})}{\sigma\omega_i}\right)}\right\}$$

With a penalty of L1, the Least Absolute Shrinkage and Selection Operator is one of the strongest estimators of Ordinary Least Square.

$$\text{Standard deviation of ROA }_i = \frac{1}{2m}\sum_{i=1}^{m}\left(y_i - \beta_0 + \sum_{j=1}^{p} x_i\beta_j\right)^2 + \lambda\sum_{j=1}^{p}|\beta_j|$$

3.3. Variables and Measurements

3.3.1. Dependent Variable

There are 4 variables are used in the study such as Bank risk, bank ID, and control variables are the four types of variables. The standard deviation of return on asset are used to assess bank risk, which is a dependent variable.

The formula to measure the Standard deviation of the ROA is to take the standard deviation of the ROA of the banks across the time. Standard deviation of ROA indicated the volatility in ROA of banks over the time. It can be measure by the below equation.

$$\left(sd\ (ROA_{i,\ t}) = \sqrt{\frac{\sqrt{(ROA_{i,\ t} - ROA_{i,t})2}}{n-1}}\right)$$

3.3.2 Independent Variable

3.3.2.1 Income Diversification

Income Diversification offers a steady and less variable revenue, scale economies, and the potential to leverage management efficiency beyond goods, according to promoters of activity diversification or product range (Kotrozo & Choi, 2006). According to Chiorazzo et al., (2008), activity diversification contributes to increased efficiency in banking organizations due to scale economies generated by joint production of financial operations. They also claimed that diversifying product range lowers overall risks even though NII operations are not directly linked, or at least not strongly linked, with revenue from service charge operations, and thus diversification should stabilize gross profit and produce a more steady flow of revenues.

The ratio of interest income= (Interest Income)/ Total Income) may be used to determine measurement of income diversification.

3.3.2.2 Bank Loan Portfolio

The bank loan portfolio which is also known as credit risk is defined as the risk of suffering a loss as a consequence of debtors' failure to pay back the amount of loan according to the terms and conditions agreed upon. It refers to the possibility that the loan's lender will not receive the principal amount of the loan, as well as interest, affecting the firm's cash flow and increasing collection costs.

It can be measure by Total nonperforming loans / Total loans & Advances or gross loans

3.3.2.3 Control Variables

A control variable in a research endeavor is anything that is kept constant or controlled. It's a variable that has nothing to do with the study's goals, yet it's kept in check because it could alter the results. Variables can be completely determined by maintaining them constant throughout a study eg, by maintaining the room temperature in an experiment) or passively by employing tools like randomized or statistical control (e.g., to account for participant characteristics like age in statistical tests).

The prevailing study utilized 4 control variables. Which given below

1. **Size:** size of the banks sows the overall assets of the banks. Due to serial correlation the study used the log of total assets of the banks. Its can be measure by TA= log Total Assets = asset scale, indicating differences in bank size

2. **Equity:** the study used the equity of the banks as control variable. The equity can be measure by the amount of total outstanding shareholders.
3. **Loans:** the study also the loans as control variable. For the loan the study utilized the proxy of total loans/ total asset ratio, it means loans can be measured by the ratio of total loans and total assets of the banks.
4. **Deposits:** the study also utilized the deposits as control variable. The proxy for the deposits is used in the study is deposits/ total assets. The ratio of the total deposits and total assets of banks is used as proxy of control variable of deposits.

3.3.2.4. Data analysis and Empirical Model

The term "data analysis" refers to the methods and processes that were used to collect and analyzed data. This research project's statistical analysis will be based on secondary data. The statistics software SPSS will be used to perform statistical tests and other methods for data analysis. The calculation of several measurements to reveal the relationship between variables is known as data analysis. This metric aids the research in data interpretation, conclusion drafting, and decision-making based on data analysis. Secondary data was utilized in the research, which was compiled and organized using Excel. The prevailing study will used statistical tools like Descriptive statistics, correlation, and regression analysis and post diagnosis test for analysis of the study.

3.3.2.5. Empirical model

The prevailing study utilized empirical model of the study given below.

$$SDROA=\alpha+ \beta_0 (Inc.Div) +\beta_1 (RNPL/GA*100) + \beta_2 (Size) + \beta_3 (Deposit) + \beta_4 (Loans) + \beta_5 (Equity)$$

Where SROA is the standard deviation of the ROA, which is utilized as a proxy for bank risk in this research and is also the study's dependent variable.

Inc.Div stands for income diversification, which is the study's independent variable. The interest-to-total-income ratio is used to calculate this.

The bank loan portfolio, commonly known as credit risk, is represented by RNPL/GA*100. It is one of the study's independent variables. The ratio of NPLs to the bank's total loans and advances was used to calculate it.

The study's control variables include size, equity, loan, and deposits. The log of the bank's total assets was used to determine its size. The entire number of outstanding shareholders was used to calculate equity. The ratio of total loans to total assets is used to calculate the loan. The ratio of total deposits to total assets is used to calculate deposits.

CHAPTER 4

FINDINGS AND INTERPRETATION

4.1 Introduction

The primary goal of the study is to determine the impact of ID loan portfolio on Bank risk of Pakistan. As a result, secondary data of 15 banks were collected from annual reports and was collected and analyzed using SPSS, yielding the following results. We will interpret the results in percentages because the data for analysis is collected is in ratios.

4.2 Descriptive Statistics

Descriptive statistics are measurements that describe the overall features of a data collection. They define the kind of accountability that may be generated from primary and secondary data. In this research, descriptive statistics included the minimum, mean, maximum, and standard deviation. Descriptive statistics were performed on SROA (bank risk), ID (Interest Income/Total Income), Loan portfolio (Non-Performing Loans / Gross Advances*100), commonly known as credit risk, and control variables of deposit, loan, equity, and bank size. The descriptive statistics results are shown below.

In descriptive statistics, the values of will be used to assess abnormalities in the distribution, while the values of kurtosis will be used to evaluate the distribution's peakedness or flatness. The values for Skewness and Kurtosis in the descriptive statistics findings reveal that all of the variables in the research were negatively skewed, indicating that asymmetrical distributions are flatter or skewed with a long tail to the left. According to Tabor (2010), levels of skewness are regarded normal when they are less than 2, while values of kurtosis are considered normal when they are less than 6. Skewness values higher than 2 are considered non-normal, while kurtosis values greater than 6 are considered non-normal.

Table 4.1 **Descriptive Statistics**

	N statistics	SROA	Inc. Div	NPL/GA	Deposit	Loan	Size	Equity
Mini	263	0.03	0.06	0.05	1.60944	2.99573	-1.5871	-2.9957
Maxi	263	0.12	0.2	0.13	2.56495	4.09434	4.02267	3.01421
Mean	263	0.0676	0.11091	0.0897	2.15697	3.66353	1.22513	0.1318

Std. Devi	263	0.02168	0.0372	0.02646	0.30606	0.32091	0.96734	0.88542
Skewness	263	0.334	0.789	-0.015	-0.391	-0.531	-0.149	-0.025
Std. Error	263	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Kurtosis	263	-0.351	-0.221	-1.277	-1.08	-0.878	-0.179	0.42
Std. Error	263	0.299	0.299	0.299	0.299	0.299	0.299	0.299

According to Table 4.1, the average SROA of sample commercial banks in Pakistan was 0.0676 During the study period, with a maximum of 0.12 and a minimum of 0.03. A small standard deviation of 0.02168 was found, indicating that SROA or bank risk varied little between commercial banks. Furthermore, the total value of ID was 0.1109 on an average, with a high of 0.2 and a minimum of 0.06. The bank loan portfolio had a mean total value of 0.0897 and a maximum value of 0.13 and the minimum value of 0.05. The deposits average was 2.15697 among all commercial banks, with a high of 2.56495 and a minimum value of 1.60944. The loan had a mean total value of 3.66535 and a maximum value of 4.09434 and the minimum value of 2.99573. In addition, size had a mean total value of 1.22513 with a maximum value of 4.02267 and a minimum value of -1.5871. Furthermore, equity had a mean total value of 0.1318 and a maximum value of 3.01421 and the minimum value of 2.9957.

4.2 Correlation Analysis

The researchers utilized Karl Pearson's coefficient of correlation to establish the causal connections between the variables. The product-moment of the Pearson correlation coefficient, denoted by r and ranging from +1 to -1, determines the strength of a linear connection between two variables. A value of 0 indicates that no connection exists between variables. The value of a positive connection is higher than zero, whereas the value of a negative relationship is less than zero. To determine whether there was a linear connection between the variables of ID, Loan portfolio and Bank risk, Pearson's coefficient was used. The following are the outcomes:

Table 4.2 **Correlations Matrix**

	SROA	Inc. Div	NPL/GA	Deposit	Loan	Size	Equity
SROA	1						
(p) (2 tailed)							
Inc. Div	-.526**	1					
(p) (2 tailed)	.000						
NPL/GA	+0.56	-0.64	1				
(p) (2 tailed)	0.026						
Deposit	-.006	.007	-.062	1			
(p) (2 tailed)	.918						
Loan	.047	.065	-.066	-.060	1		
(p) (2 tailed)	.451						
Size	-.157*	.114	.025	-.107	.021	1	
(p) (2 tailed)	.011						
Equity	.086	.040	.003	-.220**	.088	.668**	1
(p) (2 tailed)	.164						

Table 4.2 shows that ID and SROA have a significant adverse connection with (r =-0.526, P-val 0.000). This indicates that SROA is positively influenced by ID. According to the study, there was also a positive connection between the Bank loan portfolio and bank risk SROA (r =+0.56, P-val 0.026). It displays that bank loan portfolio adversely affect the bank risk As a consequence, the controlling effect of bank size has strongly adverse effect with (r =-0.157, P-val 0.011. It illustrates that size also can effect positively a bank. Whereas the other three control variables of loan, deposits, and equity (r =0.047, P-val 0.451; (r =-0.0066, P-val 0.918 and (r =0.086, P-val 0.164) have no significant impact respectively.

4.3 Analysis of Regression

To determine whether there was a link between EB factors and bank financial performance, the researcher conducted a multivariate regression analysis. The researcher utilized the statistical software for social sciences to integrate and calculate the study's numerous regression measures (SPSS V 21.0). The coefficient of determination (or the proportion will indicates of variation in the dependent variable SROA explained by two independent variables ID, as well as a credit portfolio.

Table 4.3. THE LASSO AND EBA TECHNIQUES

	Pre-OLS	**EBA**	**LASSO**	**Post- OLS**
Inc. Div	-0.31 (2.46)*	-0.42 (4.19)**	0.000** (9.608)	-0.32 (2.59)*
NPL/GA	-0.11 (1.54)		0.001** (1.422)	-0.09 (1.22)
Deposit	0.11 (0.97)			
Loan	-0.10 (1.74)		0.982** (0.022)	-0.10 (1.77)
Size	-0.39 (3.98)**	-0.41 (4.11)**	0.831** (0.213)	-0.34 (3.66)**
Equity	0.46 (17.36)**	0.46 (17.23)**	0.000** (7.050)	0.44 (20.49)**
		(1.24)		
_cons	1.40 (2.26)*	1.45 (2.32)*		0.90 (1.82)
R^2	.86			
N	150	150		150

Table 4.7 displays the results of a regression analysis of the impact of ID and bank loan portfolio on bank risk as measured by the standard deviation of ROA (SROA). If the p-value is less than 0.05 (5 percent), the H0 hypothesis is rejected and the alternative hypothesis is accepted (5 percent). The direct connection coefficients for SROA, ID, and Bank loan portfolio are 0.299 and 30.146, respectively. With a p-value of 0.000, ID shows a significant adverse relationship with Pakistani bank risk. The bank loan portfolio, on the other hand, shows positive correlation with

bank risk, with a p-value of 0.001. It means that ID will increase he revenue of the banks and will reduce the bank risk. A 1% increase in the ID leads to reduce the bank risk to 0.299 %. The bank loan portfolio will cause to increase the bank risk if the banks used optimum level of NPL. It indicates that 1 % increase in bank loan portfolio will increase the risk up to 30%. Bank loan portfolio is also Credit risk, so increase one risk can increase the overall risk. The model summary also reveals that the regression model accurately predicts the dependent variable (SROA). The statistical significance of the regression model that was performed is shown by the F test. The fact that the regression model predicts the outcome variable.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The empirical findings of the data analysis that were calculated during the previous chapter of data analysis will be discussed in this part of the research. The study's goal was to look at the impact of identification and bank loan portfolio on the risk of Pakistani banks. The purpose of this research was to look at the impact of identification and bank loan portfolio on the risk of Pakistani banks. This section will go through all of the study's findings as well as the conclusions reached as a consequence of them. The study's recommendations for policy implications and suggestions for future research in the area of risk management and its impact on bank performance will also be discussed in this chapter.

HI: Income Diversification has significant effect on bank risk of Pakistan

The study's hypothesis was to determine the impact of ID on Pakistani bank risk. The study's findings suggest that there is a significant adverse relationship between Pakistani ID and bank risk. As a result, we may reject the H0 hypothesis and accept the alternative. The following results are shown in this table4.3. Banks' profitability rises when ID rises. The increase in the ID reduce the risk because when a bank earn more revenue its exposer to risk is also low and volatility of ROA is also low. This is a crucial finding that emphasizes the need of diversity in boosting banking profitability. As a result, bankers must understand the necessity of diversifying their investments beyond the fundamental operations that have become outdated in today's knowledge-based society. Banks should also adjust their strategies to the economic cycle, technological advancements, and societal changes. According to Schumpeter (1912), innovation is critical in the process of economic growth, and the evolution of civilization will lead to both destructive and creative invention. From the result of the prevailing study we may infer that diversification is a strategy for increasing profitability and operational efficiency, especially as the size and coverage of activities improve (Landskroner et al., 2005). In the banking industry and under various market regimes, a greater ratio of NII or ID to interest income is linked with better profitability. Furthermore, banks with a high NII are less risky than those whose primary source of revenue is interest. A rise in a bank's income leads to a reduction in the bank's risk. Our findings corroborate

those of Nguyen et al., (2015) and Saunders et al., (2016) as cited by (Hamdi et al., 2017) and Lin et al., 2005).

Only SROA seems to be influenced adversely and substantially by size. An increase in banking size is linked with a decline in bank risk as assessed by the logarithm of total assets. The other control variables loan, deposits and equity and have no significant effect. It infers that size of the banks also can increase the risk of banks if they help the high ratio of credit risk. Loans given to clients is assets for the banks but the loans become NPL then these assets become credit assets which increase the risk for the banks.

H2: Bank Loan Portfolio has significant effect on bank risk of Pakistan

The second hypothesis of the study was to evaluate the effect of bank loan portfolio on bank risks of Pakistan. The result of the study as shown in table 4.3 illustrated that bank loan portfolio has positive effect on bank risk. So we can reject the H^0 and accept the alternative hypothesis. As expected, the coefficient of bank loan portfolio, which was measured by the NPL to total loan ratio, was positively and statistically significant at the 5% significance level (p-value = 0.001). According to the coefficient of bank loan portfolio if bank loan portfolio rose by 1%, SROA would rose by 30.146 percent. The positive coefficient means that when the provision for loan losses rises, the cost of bad debt write-offs rises as well, lowering the bank's profitability. As the bank profitability decreases the bank risk increased. Banks that confront increased credit risk are more likely to pass the risk premium on to lenders as a consequence of their risk-averse behavior, resulting in higher interest rates. As a result, the higher the risk, the higher the price of loans and advances to compensate for the potential loss, resulting in increased default risk and, as a result, worse commercial bank business performance in Pakistan. As a result of the results, we can infer that credit risk or loan portfolio is one of the major threats to Pakistani commercial banks. In addition, unlike Egziabhere, (2015), the findings are consistent with Muriithi, (2016) and Bagh Khan, M. A., & Sadaf, R.,(2017) and Lin et al., 2005).

5.2 Conclusion

In Pakistan's banking sector, the sources of bank revenue are very diverse. The research indicates that identification has a substantial beneficial effect on bank risk. H1 is linked to the study's first goal, which is that there is an adverse relationship between Pakistani ID and bank risk, as determined by the study's findings. While the bank loan portfolio has a substantial positive effect

on Pakistani bank risk. H2 was linked to the study's second goal, which said that there is a strong link between bank risk and bank loan portfolio. The study's findings helped to accomplish the goal. This led to the adoption of both H1 (the hypothesis that commercial banks in Pakistan are diversifying their sources of revenue) and H2 (the hypothesis that using the optimal amount of loan portfolio may increase risk). They also find that the study's size has a negligible impact on bank risk, whereas other control variables have no significant impact.

The outcomes of this study offer management with useful information on the optimal corporate model for ensuring that diversification activities are efficient. These findings are beneficial to Pakistani bank management and regulatory bodies. Management, for example, should emphasize the effects of diversification on bottom-line earnings. This will help to guide strategic decisions about the optimal models for maximizing the potential advantages of non-interest-generating activities.

According to the findings of this research, Pakistani authorities should concentrate on increasing the openness of bank ID composition. Understanding the changing nature of banking in Pakistan would be aided by transparency. Considering the recent financial institution financial crisis, which hit both developed and developing countries and in which fee-based income from securitization played a key role, improved transparency of bank income streams, notably NII, has become a global priority. Even though this study only looked at one developing economy over a short span of time, it highlights the need for more empirical research in other emerging markets to ensure the findings are valid. Based on the previous credit crisis, which pushed risk management to the forefront, understanding how banks with different ownership types maximize their revenues from a diverse portfolio and the risk-return tradeoffs that occur is critical.

This research has ramifications for commercial bank regulators and policymakers. They should take into account the variables that influence market competitiveness. If banks diversify their portfolios further, their fundamental role of financial intermediation may suffer, thus causing friction in Pakistan's economic development.

Banks should intensify efforts to maintain gains in both interest and NII activities in order to enhance their performance. According to the research, branch network expansion operations should only be undertaken after a thorough cost-benefit analysis has been completed. The study's findings also suggest that robust credit risk or loan asset management regulations be established

and executed properly in order to reduce NPL, which have a Positive impact on bank risk, while also promoting loan portfolio profitability and thus improving bank performance.

Therefore, diversification is a smart approach for banks to minimize earnings volatility and enhance performance, but it must be done with caution since over-diversification may lead to additional issues, including greater risk of default and worse performance. The policy makers and bank management should balance the loan portfolio and ID of the banks do reduce risk.

5.4 Limitation of the Study

The cost and time constraints in this research resulted in the analysis only being conducted on the KSE-listed commercial banks. Because the emphasis of this research was on banks, the data findings may not be relevant to other financial companies. This is due to the distinctions that exist between commercial banks and other financial firms. While it may provide useful information to other financial organizations, such findings should be taken with caution due to the differences in how banks and other financial institutions function. To overcome this restriction, it may be necessary to expand the scope of this research to include additional financial institutions.

5.6. Area of Further Research

More research may be done to see whether the segregated impact of NII sources can be used to determine which source is more beneficial for performance. Data sets with a longer time span and institutions with separate ownership may also be examined for better results. The effect of macroeconomic factors such as interest rates, may also be considered.

Future study may help by looking at the risks and rewards of bank ID. In order to determine the determinants of NII, additional firm-specific, industry-specific, and macroeconomic variables should be investigated.

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