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"Impact of Financial Innovation, Capital Structure and Earning Management on Risk Management: Evidence from Pakistani Banking Industry"

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List of Abbreviations

wfi: Financial Innovation Index

wadcc: Working Capital Accruals Difference Coefficient

wcs: Weighted Capital Structure Ratio

wliq: Weighted Liquidity Ratio wfz: Weighted Bank Size Index

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List of Symbols

Y	Variable
α	Constant/intercept
Q	Slope
ε	Error term

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Abstract

The Pakistani banking industry is undergoing a rapid change, marked by increased financial innovation adoption, modifying capital structures, and worries over possible profits manipulation. This study investigates how these elements interact and how they affect risk management techniques in the sector. The study used regression analysis to examine the links between financial innovation, capital structure, earnings management, and risk management governance using data panel from 23 commercial banks from 2011 to 2021.

Keywords: Financial innovation Capital structure. Earnings management Risk management Pakistani banking industry Panel data

Chapter 1

Introduction

1.1 Introduction of Banking Sector Transformation

The global banking sector has undergone substantial transformations in recent years, with financial institutions navigating an increasingly complex landscape shaped by economic fluctuations, regulatory frameworks, and technological advancements. These challenges are particularly pronounced in the Pakistani banking sector, creating a pressing need for a deeper understanding of the factors influencing risk management practices.

Financial innovation has contributed to rapid transition in the financial industry in recent years It has resulted in the development of new goods, services, and business models, which has had a considerable influence on how banks operate and manage risk. Furthermore, changes in capital structure (Berger et al, 2020) and earnings management techniques (Gahraou et al, 2020) have impacted banks' risk management strategies. In recent years, the Pakistani banking industry has seen tremendous transition because of financial innovation, capital structure changes, and earnings management methods. These variables have had a significant influence on banks' risk management methods and ability to withstand financial crises. The influence of financial innovation, capital structure, and profits management on banks' risk management strategies in Pakistan is investigated during this dissertation.

The evolving dynamics of the global banking sector have ushered in a new era marked by unprecedented changes, propelled by a trifecta of forces: financial innovation, shifts in capital structure, and the involved branch of earnings management. The seismic impact of these factors resonates acutely within the contours of the Pakistani banking industry, where the confluence of economic undulations, regulatory frameworks, and technological advancements poses unique challenges. Against this backdrop, an imperative arises for a comprehensive exploration into the labyrinth of influences that shape risk management practices in Pakistani banks. The financial landscape has undergone a remarkable metamorphosis spurred by the relentless march of financial innovation This transformative wave has not merely introduced new products and services but has fundamentally altered the DNA of banking operations. From novel business models to groundbreaking approaches in risk management, the ripples of financial innovation have left an indelible mark on the industry. In this context, one can find the core of inquiry, seeking to unravel the elaborate interplay between financial innovation and risk management practices in the dynamic landscape of Pakistani banking. As the industry faces these transformative forces, it is imperative to recognize the interdependence of risk management with changes in capital structure and earnings management practices. The findings of research on capital structure changes resonate in the passages of banking institutions, emphasizing the profound implications these shifts hold for risk management strategies. These influences, when interwoven, form a tapestry of challenges and opportunities that define the resilience of banks in the face of financial uncertainties.

In the crucible of the Pakistani banking industry, this mélange of financial innovation, capital structure evolution, and earnings management intricacies has been particularly pronounced. Industry has undergone a metamorphic journey, with banks navigating uncharted territories shaped by these transformative forces. Against this backdrop, this thesis emerges as a beacon, seeking to unravel the impact of financial innovation, capital structure dynamics, and earnings management practices on risk management within the unique context of the Pakistani banking landscape.

The research is not merely an academic recreation; it is a response to the call of an industry in blend, signaling for insights that transcend theoretical frameworks and delve into the rational realities faced by banking institutions. By directing the loopholes of these influential factors, we aspire to contribute an understanding that goes beyond the surface, offering actionable insights for banks, policymakers, and regulators alike. As we embark on this exploration, we recognize that the answers we seek are not isolated; they are woven into the fabric of an industry navigating the waves of change – a tapestry that reflects the resilience, adaptability, and strategic acumen of Pakistani banks in the face of evolving challenges.

1.1.1 Background

Financial innovation refers to creating new financial products, services, and processes. It has been a critical driver of economic growth and development in Pakistan. In the banking sector, financial innovation has led to the development of new products such as mobile banking, online banking, and Islamic banking. These products have helped increase finance access for a broader range of customers. (Beck et al, 2016)

Capital structure refers to a bank's mix of debt and equity financing. The choice of capital structure is an essential decision for banks, as it can significantly affect their risk profile. On the one hand, debt financing is relatively inexpensive and can help to boost banks' profitability. However, debt financing also increases banks' leverage and makes them more vulnerable to financial shocks. On the other hand, equity financing is more expensive, but it also provides banks with a capital cushion that can help them to absorb losses. Banks must balance debt and equity financing to maximize their profitability while minimizing risk.

Earnings management is the practice of taking accounting actions to influence reported earnings. Earnings management can be motivated by various factors, such as the desire to meet or exceed analyst expectations, avoid regulatory sanctions, or attract investors. Earnings management can hurt banks' risk management practices. For example, banks may artificially use earnings management practices to boost their capital adequacy ratios. It can lead to banks taking on more risk than they can afford. Additionally, earnings management can obscure banks' financial condition, making assessing and managing their risks more difficult.

Pakistan's financial innovation canvas has been painted with progress and economic advancement strokes. The process of introducing new financial products, services, and processes is defined as financial innovation. Financial innovation has emerged as a pivotal force propelling economic growth in the country. In banking, this innovation has manifested in groundbreaking products such as mobile banking, online banking, and the distinctive landscape of Islamic banking. These advancements signify a leap forward in technological sophistication but, more importantly, have democratized access to financial services, reaching a broader spectrum of customers and fostering financial inclusion.

Within the elaborate areas of the banking sector, the choice of capital structure emerges as a critical determinant of financial stability and risk exposure. The delicate equilibrium between debt and equity financing dictates a bank's risk profile, rendering the decision a strategic cornerstone. Debt financing, while cost-effective, amplifies leverage and renders banks susceptible to financial shocks. Conversely, albeit more expensive, equity financing is a robust capital cushion, fortifying banks against potential losses. Striking the optimal balance becomes imperative for banks, requiring a judicious approach to maximize profitability without compromising risk management efficacy. (Shah et al, 2012)

Earnings management, a formal practice within financial institutions, involves strategic accounting actions to influence reported earnings. Motivations for earnings management vary, ranging from meeting analyst expectations to avoiding regulatory scrutiny or attracting investors. While this practice can bolster short-term financial metrics, its implications for risk management in banks are multifaceted. For instance, manipulating capital adequacy ratios through earnings management may inadvertently expose banks to heightened risks as their financial health becomes artificially inflated. Moreover, the opaqueness introduced by earnings management complicates the task of accurately assessing and managing risks, thereby posing a substantial challenge to effective risk management practices.

The complex interplay of financial innovation, capital structure decisions, and earnings management practices underscores the evolving landscape of the Pakistani banking industry. As the sector adapts to these transformative forces, dissecting their collective impact on risk management is imperative. Beyond the technological advancements and strategic financing choices lies a complex network of challenges and opportunities exploration, where the interwoven threads of innovation, capital structure, and earnings management shape the financial landscape and the risk resilience of banks in Pakistan. This exploration delves beyond theoretical frameworks, seeking to unravel the pragmatic implications for banks operating in this dynamic environment. It is an endeavor to offer insights that transcend academic discourse, providing actionable intelligence for banks navigating the labyrinth of financial innovation, capital structure decisions, and the intricacies of earnings management. As I embark on this journey, I aim to comprehend these influences and distill practical strategies that fortify the foundations of risk management in the Pakistani banking sector.

Impact of Financial Innovation

Financial innovation has had a significant impact on banks' risk management practices. New financial instruments and technologies have created new sources of risk, providing banks with new tools to manage these risks (Beck et al, 2021). For example, developing derivatives has allowed banks to hedge against various risks, such as interest rates and credit risk. However, derivatives can also be complex and difficult to value, which can increase risk if they are not adequately managed (Wang et al, 2022). In addition, financial innovation has led to the growth of new types of financial institutions, such as shadow banks (Demirgüçat et al, 2019). Shadow banks are non- bank financial institutions that engage in activities like traditional banks but are not subject to the same regulatory oversight (Adrian et al., 2018). It can pose risks to the financial system, as shadow banks may be more prone to failure or engage in riskier activities.

Impact of Capital Structure

A bank's capital structure, or the mix of debt and equity financing, is a critical factor influencing its risk-taking behavior Banks with higher capital levels are generally less risky, as they have more cushion to absorb losses. However, banks with high capital may be less profitable, as they must pay higher interest payments to their debt holders. Recently, there has been a trend towards increased bank capital requirements (Adrian et al., 2018). It is partly due to the financial crisis of 2008, which revealed that many banks were undercapitalized and, therefore, vulnerable to losses. The Basel III Accord, implemented in response to the crisis, has significantly increased bank capital requirements.

Impact of Earnings Management

Earnings management uses accounting methods to manipulate a company's earnings artificially. Banks may manage earnings to meet regulatory requirements, impress investors, or meet internal targets. Earnings management can also increase risk, making it difficult for investors and regulators to assess the proper financial health of a bank In recent years, there has been a growing focus on earnings management in the banking industry which is partly due to several high- profile cases of earnings manipulation by banks, such as the case of Wells Fargo. Regulators have also become increasingly concerned about the potential for earnings management to increase risk in the banking industry (Wang et al, 2022).

1.2 Research Gap

Despite the growing importance of risk management in the Pakistani banking sector, there remains a significant research gap. Existing studies have primarily focused on individual aspects of risk management, such as credit or market risk, and have yet to examine the interplay between financial innovation, capital structure decisions, earnings management, and their collective impact on risk management strategies. Existing literature on financial risk management in the Pakistani context often focuses on individual influences such as capital structure or earnings management. However, there needs to be more comprehensive research that considers the combined force of these factors alongside financial innovation.

The study aims to bridge this gap by providing a multi-dimensional analysis of the interplay between financial innovation, capital structure, and earnings management in shaping risk management practices within Pakistani banks.

The research endeavors to bridge an existing void in the literature by systematically examining the difficult dynamics surrounding financial innovation, capital structure decisions, and earnings management practices in the context of the Pakistani banking industry. The focal point of this investigation is the consequential impact of these factors on the risk management practices employed by banks operating in Pakistan. Through a methodical and thorough analysis, the study aspires to unravel the multifaceted relationships among financial innovation, capital structure, earnings management, and risk management within the unique framework of the Pakistani banking landscape.

The significance of this research lies in its potential to fill a critical knowledge gap concerning the interplay of these factors and their collective influence on risk management. Strategies in the Pakistani banking sector. The study aims to uncover patterns, challenges, and opportunities that shape banks' risk management practices in this context by delving into the specifics of financial innovation, capital structure dynamics, and earnings management intricacies.

The overarching goal is to offer actionable insights derived from empirical evidence, thereby contributing to the fortification of the resilience and sustainability of the banking sector in Pakistan. Through rigorous analysis and thoughtful interpretation, the research provides stakeholders, including banks, policymakers, and regulators, with practical strategies to inform decision-making processes. The intended outcome is to advance scholarly understanding and equip industry players with the knowledge to navigate the complex landscape shaped by financial innovation, capital structure choices, and earnings management practices in the Pakistani banking industry.

1.3 Problem Statement

The problem revolves around the need for a holistic comprehension of the multifaceted factors influencing risk management practices within the Pakistani banking sector. This need for more understanding gives rise to several critical challenges, encompassing individual banks' strategic decision-making ability and regulators' ability to craft policies conducive to the sector's sustainable growth. One of the primary challenges emanating from the need for a comprehensive understanding is the need for more insights into the risk management strategies employed by banks. Banks may find themselves navigating the risk landscape unthinkingly without a proper grasp of the sophisticated relationships between financial innovation, capital structure decisions, and earnings management practices. This limited visibility into effective risk mitigation strategies can impede their ability to proactively address emerging risks, potentially jeopardizing long-term financial stability. Consequently, the banking sector may need help adapting to dynamic economic conditions and evolving industry landscapes. (Awan et al. 2022)

Regulators and policymakers need a comprehensive understanding of the factors influencing risk management practices to develop targeted policies. The intricacies of financial innovation, capital structure choices, and earnings management nuances require adequate policy. The absence of such tailored guidance can result in regulatory frameworks that inadequately address Pakistani banks' specific risk management challenges. This misalignment may not only compromise the effectiveness of regulatory oversight but also hinder the sector's ability to respond to emerging threats cohesively.

A general lack of comprehensive risk management practices has broader implications for the growth and development of the Pakistani banking sector. Financial institutions drive economic development, channel resources, and foster stability. However, the sector's overall growth potential becomes unrestricted when risk management practices are well-understood and implemented effectively. The hesitancy of investors and stakeholders to engage with a sector perceived as inadequately equipped to manage risks can stifle investment, innovation, and the overall evolution of the financial ecosystem.

In essence, the problem statement highlights a critical gap in knowledge that resonates through the strategic decisions of individual banks, the formulation of regulatory policies, and the overarching development of the Pakistani banking sector. Addressing this gap through a comprehensive exploration of the impact of financial innovation, capital structure, and earnings management on risk management practices is imperative for fostering a resilient, adaptive, and thriving banking sector in Pakistan.

The financial landscape resembles a high-wire act, constantly evolving with the introduction of innovative products and technologies. While these advancements hold immense potential to enhance efficiency, democratize access to finance, and diversify risk profiles, they also unveil new and elaborate risk dimensions. Navigating this complex terrain necessitates a comprehensive understanding of how three key elements interweave: financial innovation, capital structure, and earning management practices. Financial innovation, encompassing novel technologies, products, and processes (e.g., mobile banking, algorithmic trading, fintech solutions), unlocks unparalleled economic growth and inclusivity avenues.

However, its disruptive nature necessitates robust risk management frameworks to address cybersecurity threats, operational complexities, and potentially systemic fragilities. Conversely, a higher equity base, although offering greater resilience, might limit growth opportunities. Earning management practices and manipulating reported earnings introduce an additional layer of complexity. It calls for solid governance structures and unwavering transparency to mitigate the risks associated with inflated risk-taking behavior and accurately portray an institution's financial health. Regulatory frameworks are crucial in overseeing these practices and fostering a level playing field. This research aims to address the identified gap by systematically exploring the impact of financial innovation, capital structure, and earnings management on the risk management practices employed by banks in Pakistan. This ambitious inquiry is motivated by recognizing the deficiencies in holistic knowledge surrounding these interrelated factors and the consequent challenges the banking sector faces in effectively managing risks.

Through a rigorous analytical framework, this study aspires to loosen the involved relationships between financial innovation, capital structure choices, earnings management intricacies, and the risk management practices adopted by banks operating in the specific context of Pakistan.

By delving into the complicated dimensions of these factors, the research seeks to provide a perfect understanding and actionable insights that can directly contribute to enhancing the resilience and sustainability of the banking sector in this unique setting.

The systematic exploration of the impact of financial innovation is poised to uncover how introducing novel financial products, services, and processes influences risk management strategies. Simultaneously, examining capital structure decisions will shed light on how the delicate balance between debt and equity financing shapes the risk profile of banks. Furthermore, scrutinizing earnings management practices will unveil the complexities introduced by strategic accounting actions and their implications for risk management efficacy. Through this comprehensive analysis, the research aims to fill the void in current knowledge and provide a robust foundation for informed decision-making by banks, regulators, and policymakers alike. The goal is to equip stakeholders with actionable insights derived from empirical evidence, facilitating the formulation of strategies that fortify the foundations of the banking sector in Pakistan. The anticipated outcomes of this research extend beyond academic discourse, offering practical applications that contribute to the sector's adaptability, resilience, and sustained growth in the face of dynamic economic landscapes and evolving industry paradigms.

1.4 Research Questions

Financial innovation, capital structure decisions, and earnings management practices each impact risk management strategies in Pakistani banks in many ways. By introducing new financial products and services, financial innovation can create opportunities for banks to diversify their risk. Capital structure decisions, such as choosing between debt and equity financing, can affect a bank's ability to absorb losses and manage risk. Earnings management practices, which involve manipulating financial statements, can distort the actual risk profile of a bank. Understanding the individual effects of these variables is essential, but it is equally crucial to examine their combined effect on the overall risk profile of banks operating.

a) What is the impact of Financial Innovation on Risk Management?
b) What is the impact of capital structure on Risk Management?
c) What is the impact of earning management on Risk Management?

1.5 Research Objectives

The primary aim of this study is to provide a comprehensive analysis of the impact of financial innovation, capital structure, and earnings management on risk management practices in the Pakistani banking sector. Specific aims include Increasing customer satisfaction by improving response times to inquiries. Enhancing employee productivity by implementing new software tools and providing training. Expanding market share by launching targeted marketing campaigns in key regions. Improving product quality by conducting regular quality control checks and implementing corrective measures. These goals are crucial for the organization's success as they directly address vital areas that can drive growth and improve overall performance. By improving response times to customer inquiries, the organization aims to enhance customer satisfaction, which can lead to increased customer loyalty and repeat business.

1.6 Significance of the Study

The significance of this study extends beyond its immediate scope, resonating with academic and industry stakeholders. The multifaceted implications offer valuable insights and practical applications to various segments. For policymakers, the findings of this research can serve as a cornerstone for crafting and refining regulatory frameworks within the Pakistani banking industry. Understanding how financial innovation, capital structure decisions, and earnings management practices collectively impact risk management strategies provides policymakers with a good perspective. The study may illuminate areas where regulations could be fine-tuned to encourage prudent practices while fostering innovation within the financial sector.

Policymakers can leverage these insights to create an environment that enhances financial stability and safeguards against potential risks. Bank managers and executives stand to gain actionable intelligence from the study's findings. The involved exploration of financial innovation, capital structure dynamics, and earnings management intricacies offers a holistic understanding of their interconnectedness. Banking practitioners can use these insights to refine risk management strategies, recognizing the stable relationships between them. The study equips them with a comprehensive view, enabling more informed decision-making in navigating the evolving landscape of the Pakistani banking industry. By grasping the implications of financial innovation and capital structure choices on risk management, practitioners can optimize their approaches to enhance the resilience and sustainability of their institutions. The academic community benefits from this research as it contributes to the existing knowledge base on financial risk management. Exploring financial innovation, capital structure, and earnings management within the specific context of the Pakistani banking industry adds depth to scholarly discussions. Moreover, the study opens avenues for further exploration, prompting researchers to delve deeper into the intricacies of risk management practices within this unique setting. It catalyzes future academic inquiries, creating a foundation for ongoing discourse on how these factors shape the risk landscape in Pakistani banks.

In summary, the significance of this study reverberates through the corridors of policymaking, banking practice, and academic scholarship. It comprehensively explains the complex relationships between financial innovation, capital structure decisions, earnings management practices, and risk management in the Pakistani banking industry. The insights generated by this research are pertinent to the current landscape and lay the groundwork for informed decision-making, regulatory refinement, and ongoing academic exploration in the dynamic realm of financial risk management.

1.7 Scheme of the Study

The study will be structured as follows:

Introduction: This section will provide an overview of the research topic, highlighting the importance of risk management in the Pakistani banking sector and the research gap the study aims to address.

Literature Review: This section will conduct a comprehensive review of existing literature on risk management, financial innovation, capital structure, and earnings management. The review will find critical theoretical perspectives, empirical findings, and research gaps related to the study's aims.

Theoretical Framework: This section will develop a theoretical framework that guides the analysis of the impact of financial innovation, capital structure, and earnings management on risk management practices. The framework will draw upon relevant theories and concepts from finance, accounting, and risk management.

Research Methodology: This section will outline the research methodology employed in the study, including data collection methods, data analysis techniques, and ethical considerations. The methodology will be tailored to the specific research questions and objectives.

Empirical Analysis: This section will present the findings of the empirical analysis, using proper statistical techniques to examine the relationships between financial innovation, capital structure, earnings management, and risk management practices. The analysis will utilize a sample of Pakistani banks and consider relevant control variables.

Discussion and Recommendations: This section will discuss the findings of the empirical analysis, drawing insights from the theoretical framework and relevant literature. The discussion will identify critical implications for banking practitioners, regulators, and policymakers. Recommendations for enhancing risk management practices in the Pakistani banking sector will be developed.

Conclusion: This section will summarize the essential findings and contributions of the research

Chapter 2

Literature Review

2.1 Empirical Literature Review

2.1.1 Financial Innovation and Risk Management:

Impact of Financial Innovation on Risk Management

While financial innovation has the potential to enhance risk management capabilities, its impact is multifaceted and complex, requiring careful examination. Finance is undergoing transformational processes and technological advancements every day new and the innovative finance products and related processes coming to the market all of this process and phenomena comes under financial innovation and it has changed the financial landscape including the practices of it is management (Demirgüç- et al, 2004; Liu et al, 2011; Berger et al, 2004)

Significant studies have been done in finance related to the financial innovation and risk management which offer knowledge about events related to the financial innovation’s positive and significant impact of financial on the risk management practices which the banking sector is adopting (Awan et al., 2022) Financial innovation has helped in development of risk assessment tools techniques in their proper usage these new and adaptive tools have helped the banking sector in data analytics machine learning and archive artificial intelligence so that there would be enough financial data analyzation settings on correlations seeing this traditional methods where you use more previously and financial innovation was overlooked. The innovative financial instruments when introduced into market helped banks expand their businesses using hedging strategy , the derivatives, options contracts and such other instruments which are financially innovative are helping banks in effective transfer or of risk which helps reduction in potential losses and therefore reduction in overall exposure financial innovation has actually enhanced the transparency in the banking sector closure of practice that helps in development of standardized risk reporting frameworks within the banking system and it is still developing. (Awan et al., 2022)

Effective use of electronic reporting platforms has helped the mitigation of risk related information to all stakeholders like investors and regulators, this has increased that transparency in the banking sector which also has promoted informed decision making and accountability. Financial innovation emerged as a transformative force with respect to risk management which offered a lot of opportunities in risk assessment procedures. It strengthens risk mitigation strategies. The evolving reporting platforms electronically has helped banks to in informed thinking, it has also ensured transparency.

H1: Financial innovation positively and significantly affects risk management.

2.1.2 Capital Structure and Risk Management:

Financial industry is growing at a very rapid pace, it is being shaped by different technological advancements, it also involves a lot of regulatory changes, new processes and introduction of new improved and innovative financial products. Alot of empirical studies have examined the relationship of risk management and capital structure relationship that shows that higher capital ratios show good risk management practices. Some studies also showed that capital structure had a lot of impact on banks taking behavior in panel of developing countries which concluded that if higher debt financing is being done it means that banks are on the riskier behaviors which also highlighted the importance of capital structure usage in optimal way. (Awan et al. (2022))

Similarly, Shah et al. (2012) examined the relationship between the capital structure and risk-taking behaviors of different banks which have been working in the emerging markets where higher debt to equity ratios were shown when banks were taking high risk. All of this shows the significant and dire need for maintenance of optimal capital structure for risk management.

Demiurgic-Kunt et al. (2004) explored the theoretical and empirical basis of relationship between effective capital structure and bank management practices. This study elaborated the role of capital structure in loss maintenance of financial stability which provided comprehensive understanding of all of the mechanisms which can help influence the risk management practices on the capital structure.

Liu et al. (2011) did the meta-analysis which in turn examined international ship between the capital structure and risk-taking behavior of the banks across various areas the results demonstrated positive association between the debt financing and risk taking of the banks which in turn suggested that the higher the capital the more bank can be risky.

Berger et al. (2004) offered very thorough literature survey on the capital structure and risk-taking behavior of different banks working in different countries the study showed how important is capital structure when it comes to influencing the risk management practices among banks their financial stability and it also showed theoretical evidence of both.

High capital structure allows the different banks while investing in different risk assessment tools and techniques. It helps to identify the potential risks very effectively. Enhanced risk management always minimizes the contingency of losses expected and unexpected, also it promotes good risk management practices. A higher capital structure always discourages risky activities that can shake the financial stability of banks. Strong capital structure the banks can be shock absorbers, they can face the economic and stability and prevent themselves from losses without going bankrupt. Financial stability helps the banks to progress more protect their customers depositors and ensure good financial system.

Implications for Policymakers, Banks, and Investors

The beneficial effect of capital structure on this management also has implications helping the policymakers, the investors as well as other stakeholders relating to the banking sector. Different regulatory bodies showed keep good capital requirements for banking sector to ensure financial stability and promotion of effective systems this also includes minimizing capital and requirements and conducting sufficient capital buffers add shock absorbers.The banking sector should use sound risk management aligned frameworks to raise their capital structure. They should include developing their risk assessment procedures setting up risk mitigation limitations, capital structure and risk management are connected, with higher capital ratios contributing to enhanced risk assessment, reduced risk-taking behavior, and improved financial stability.

H2: Capital Structure significantly impacts risk management negatively.

2.1.3 Earnings Management and Risk Management

Shahzad et al (2019) This study examines how earning management are the cause of financial distress happenings in Pakistani banks their results and conclusions suggest that banks in Pakistan are using the accruals which are both discretionary and non-discretionary to manage the financial problems which are a barrier to the underlying factors and they increase of upcoming financial turmoil for the banking sector. Ali et al. (2019). This research uncovers the performance of traditional and Islamic banking sector of Pakistan working and financial distress era and then I used that commercial banks might have been using the techniques of earning management in shorter term to inflate their profits. It was also conducted that the commercial banks in Pakistan are more under stress then the Islamic banking sector working in Pakistan. It contributes to the new relationships emerging between army management techniques and risk management in commercial banks the study focuses on the banking landscape of Pakistan and our phones very valuable insights which can be applied to other contexts as well a key finding was a very positive income smoothing practice in Pakistani's banking sector. Commercial banks want to have stable scenarios showing the investors that they can meet their key performance indicators. This study specifies that techniques banks are using to mitigate their earnings management techniques banks manipulate they are risk taking behavior through risk management practices they show false financial condition it differently shows good ratios and less riskier loans and investments to show good financial conditions.

H3: Earnings Management adversely affects risk management

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2.2 Theoretical Support

2.2.1 Perspectives and Empirical Evidence

Studied research papers show how difficult macroeconomic factors related to the financial erase how different radical framework like financial fragility hypothesis that overhang hypothesis and the concept of portfolio theory of risk exists all of these mentioned frameworks show how different economic factors impact the fire king of financial systems the behaviors of the investors and credit risk taking prevailing behaviors.

Managing loans, investments, and daily operations was key to driving financial performance. Interestingly, the study found that the positive effects of effective risk management were even more pronounced for larger banks and those with higher capital adequacy levels. This suggests that size and financial strength can amplify the benefits of sound risk management strategies. Beyond the immediate financial results, the study also explored the role of risk management in enhancing a bank's resilience during challenging economic conditions. Banks with robust risk management practices demonstrated greater stability and better outcomes despite dynamic macroeconomic factors. The research underscores the critical importance of risk management for Pakistani banks. Banks can improve their financial performance, strengthen their resilience, and navigate economic fluctuations with greater confidence by prioritizing effective risk management practices in credit, market, and operational areas.

It outlines potential avenues for future research, building on the findings and limitations of the current study. Suggestions for exploring additional factors, refining methodologies, and expanding the scope of analysis are presented to enrich the understanding of the complex interplay between macroeconomic factors and financial risk in the banking sector. The connection between macroeconomic factors and financial risk remains a critical study area in a global financial landscape of volatility and uncertainty. This paper has explored theoretical frameworks and empirical evidence to deepen our understanding of this relationship, specifically focusing on the Pakistani banking sector. The synthesis of theory and data contributes to a more comprehensive understanding of the role played by risk management practices in mitigating financial risk and enhancing overall performance. As financial markets evolve, the insights gained from this analysis serve as a valuable foundation for shaping effective risk management strategies in the dynamic and complex world of banking and finance. In their meta-analysis published in the Journal of International Financial Management and Analysis, Liu et al. (2011) offer a comprehensive examination of the existing research on the relationship between capital structure and bank risk-taking behavior. Analyzing findings from 55 empirical studies encompassing diverse banking systems and regulatory environments, they provide valuable insights into the strength and direction of this relationship across various context. One key finding appearing from the meta-analysis is the overall negative association between a bank's capital adequacy ratio (a measure of capital relative to risk-weighted assets) and its risk-taking behavior (as measured by various proxies like loan-to-deposit ratio or non- performing loan ratio) (Liu et al. 2011). This suggests that, in general, banks with higher capital levels tend to engage in less risky activities, potentially due to concerns about potential losses and regulatory scrutiny.

However, the analysis also reveals significant heterogeneity in the strength and direction of this relationship across different contexts. For instance, the negative association between capital and risk-taking appears to be stronger in countries with stricter regulatory environments Additionally, factors like ownership structure, competition, and economic conditions can also influence the relationship, suggesting that a one-size-fits-all approach to regulating capital adequacy might not be optimal. Furthermore, the authors find potential moderators that influence the relationship between capital and risk-taking. For example, higher profitability might incentivize banks with higher capital levels to take on more risks Additionally, aggressive earning management practices could mask actual risk-taking, making it difficult to accurately assess the impact of capital on risk behavior.

The meta-analysis provides valuable resources for understanding the complex interplay between capital structure and bank risk-taking behavior. By highlighting the importance of context-specific factors and potential moderators, this research underscores the need for an effective approach to regulating and managing bank capital to promote both financial stability and sustainable growth. The findings of all these studies have important implications for banks, policymakers, and regulators. Banks should strengthen their risk management practices and improve their financial performance. Policymakers and regulators should promote sound risk management practices in the banking sector to enhance financial stability and protect depositors' funds. The article "Capital and Earnings Management: Evidence from Pakistan's Banking Sector" by Farah et al. (2013) examines the relationship between capital structure, earnings management, and bank performance in the Pakistani banking sector. The study employs panel data analysis using data from 25 Pakistani banks from 2002 to 2012. The study employs a robust panel data analysis method, utilizing data from 25 Pakistani banks from 2002 to 2012. This section supplies an overview using research design, data sources, and analytical techniques used to explore the involved relationship between capital structure, earnings management, and bank performance.

The empirical findings indicate a substantial impact of capital structure and earnings management on bank performance. Higher capital and lower earnings management levels are associated with superior financial performance, as measured by ROA and ROE. This section delves into the specific results, highlighting the nuances of how these factors influence the financial health of banks in the Pakistani context.

The positive correlation between higher capital levels and improved financial performance suggests a strategic imperative to maintain a robust capital structure for banks. This enhances their capacity to absorb losses and positions them more favorably regarding financial performance metrics. The negative relationship between earnings management and financial performance underscores the importance of transparent financial reporting and governance practices. Policymakers and regulators, as pivotal actors in shaping the regulatory landscape, are urged to consider the study's findings. Promoting sound capital management practices in the banking sector is crucial for financial stability.

When empirical data and implications are combined, the link between capital structures, earnings management, and bank performance is broad and complex. The positive relationship between greater capital levels and stronger financial performance provides a strategic path for banks to take to strengthen their resilience. At the same time, the negative impact of earnings management on financial performance emphasizes the significance of ethical and transparent accounting and reporting methods.

Muhammad S. et al. (2020), conducted a study which examines the complicated relationship between financial innovation and bank risk management practices within the specific context of the Pakistani banking industry. Accessing data from Pakistani banks spanning the years 2005 to 2014, the research sheds light on the impact of financial innovation on two crucial dimensions of risk management: the utilization of formal risk management tools and the quality of risk disclosures. The study discovered a positive correlation between financial innovation and enhanced bank risk management practices. Furthermore, it underscores that the influence of financial innovation on these risk management practices is notably more substantial for banks with higher regulatory capital levels. The theory sets the stage for the exploration, emphasizing the relevance of understanding the dynamics between financial innovation and risk management practices in the Pakistani banking industry. It underscores the significance of these relationships in the context of a rapidly evolving financial landscape.

It comprehensively synthesizes existing scholarships on financial innovation and bank risk management. This section delves into theoretical frameworks and empirical studies, providing a robust foundation for the current investigation. The authors critically assess the state of knowledge in the field, identifying gaps that their study seeks to address. The methodology section accurately outlines the research design implemented by Khan's publication. It details the data collection process, the analytical techniques employed, and the rationale behind the chosen temporal scope (2005–2014). The methodological transparency ensures the study's credibility and reproducibility.

The empirical findings constitute the core of the study, unveiling the relationships between financial innovation and bank risk management practices. The positive impact of using formal risk management tools and the quality of risk disclosures is explored, providing insights into how financial. An in-depth analysis is conducted to discern the impact of financial innovation on bank risk management practices concerning varying regulatory capital levels. This section explores the identified asymmetry, elucidating why the influence of financial innovation is more pronounced for banks with higher levels of regulatory capital. The authors separate the potential mechanisms behind this differential impact. The implications section synthesizes the key takeaways from the empirical findings. For banks, these insights offer strategic guidance on leveraging financial innovation for robust risk management practices. Policymakers and regulators are provided with valuable information on the potential benefits of fostering a regulatory environment that encourages financial innovation while maintaining adequate capital levels.

The conclusion synthesizes the study's key contributions and underscores the significance of its findings in advancing the understanding of the impact of financial innovation on bank risk management practices. It reiterates the practical implications for stakeholders in the banking sector, emphasizing the potential benefits of embracing financial innovation within a prudent risk management framework. Through its thorough examination of the link between financial innovation and bank risk management in the Pakistani banking industry, this study contributes significantly to the ongoing discourse on risk management practices in the context of a changing financial landscape. The insights from this research provide valuable guidance for banks, policymakers, and regulators navigating the complexities of financial innovation and its implications for risk management.

While the study provides valuable insights, it is essential to acknowledge its limitations. This section discusses the constraints inherent in the research methodology and data, paving the way for future research endeavors. Suggestions for refining methodologies, expanding the scope of analysis, and exploring additional variables contribute to the ongoing scholarly dialogue on the dynamics of capital structure, earnings management, and bank performance.

As the global financial landscape continues to evolve, the findings of this study offer pertinent insights into the factors shaping the performance of banks in the Pakistani context. The interplay between capital structure, earnings management, and financial performance has far- reaching implications for the banking sector's stability and, by extension, the broader economy. Stakeholders, from banks to policymakers and regulators, are urged to heed the lessons derived from this research to foster a resilient and transparent banking environment that ultimately benefits the economy. The World Bank's 2020 report, "Digital Financial Inclusion and Risk Management in Emerging Markets," shines a light on the double-edged sword of digital financial services (DFS) in emerging markets like Pakistan. While DFS promises financial inclusion, economic growth, and poverty reduction, it also brandishes cybersecurity threats, consumer protection concerns, and evolving regulatory landscapes.

Financial Innovation, Capital Structure, Earnings Management, A Cross-Country Analysis

The study by Awan. et al. (2022) delves into the complicated relationship between financial innovation, capital structure, earnings management, and bank risk-taking behavior in a panel of developing countries, encompassing Pakistan, India, Bangladesh, Sri Lanka, and Nepal. Their findings provide valuable insights into the factors that influence risk-taking decisions by banks in these emerging markets.

Financial Innovation and Risk Management

Financial innovation involves introducing new financial products, instruments, and processes to enhance financial efficiency and ease capital allocation. The study finds that financial innovation positively affects bank risk-taking behavior. This suggests that banks in developing countries increasingly embrace financial innovation to expand their business opportunities, leading to a higher propensity for engaging in riskier activities.

Capital Structure and Risk Management

Capital structure refers to the proportions of debt and equity financing a bank uses to fund its operations. The study reveals that capital structure also positively influences bank risk-taking behavior. Banks with higher levels of debt financing tend to exhibit riskier behavior, possibly due to the increased leverage and potential for amplified gains or losses.

Earnings Management and Risk Management

Earnings management refers to the deliberate intervention in financial reporting to influence reported earnings. The study uncovers a negative relationship between earnings management and bank risk-taking behavior. Banks that engage in earnings management practices tend to adopt a more conservative approach to risk-taking, potentially to avoid raising concerns about their proper financial health. The study further explores the moderating role of earnings management in the relationship between financial innovation and capital structure and bank risk- taking behavior. The findings suggest that the impact of financial innovation and capital structure on bank risk-taking behavior is more substantial for banks with lower levels of earnings management. This implies that earnings management can serve as a mitigating factor, tempering the risk-taking tendencies associated with financial innovation and higher debt levels.

Regulators should closely monitor banks' adoption of financial innovations to ensure that risk management practices evolve with the increasing complexity of financial products and instruments. Regulators should carefully calibrate capital adequacy requirements to reflect the risk profiles of banks, particularly those that engage in high levels of financial innovation or rely heavily on debt financing. Regulators should promote transparency and disclosure practices among banks to give stakeholders a clear picture of their financial health and risk management practices.

Awan, at al. (2022) study provide valuable insights into the involved interplay between financial innovation, capital structure, earnings management, and bank risk-taking behavior in developing countries. Their findings highlight the importance of a comprehensive approach to risk management that considers the evolving landscape of financial innovation, the impact of capital structure decisions, and the potential moderating role of earnings management practices. By carefully considering these factors, policymakers and regulators can foster a stable and resilient banking sector that supports economic growth and financial stability in developing economies.

The empirical analysis presented in the study by Farah et al. (2013) delves into the complicated relationship between capital structure, specifically the debt-to-equity ratio (D/E), accrual-based earnings management (AEM), and key financial performance metrics, namely return on assets (ROA) and return on equity (ROE). The findings reveal significant associations, with the D/E ratio positively impacting ROA and ROE, while AEM exhibits a negative and significant impact on these performance indicators. The study highlights the potential of capital structure and earnings management as practical tools to enhance bank performance. These insights hold substantial implications for banks, policymakers, and regulators, prompting strategic considerations and developing sound policies within the banking sector.

The positive and significant impact of the debt-to-equity ratio on both return on assets (ROA) and return on equity (ROE) suggests that a higher proportion of debt relative to equity positively influences a bank's financial performance. This finding aligns with traditional financial theory, which posits that a moderate level of leverage can enhance shareholder returns. However, it also underscores the importance of prudent debt management, as excessive leverage can amplify financial risks and jeopardize a bank's stability.

For banks, carefully managing the balance between debt and equity in their capital structure can be a strategic lever for optimizing financial performance. On the contrary, the study's identification of accrual-based earnings management (AEM) as having a negative and significant impact on ROA and ROE raises essential considerations for banks. Earnings management practices, particularly those involving accruals, can undermine the accuracy and reliability of financial reporting. The negative impact on financial performance suggests that reliance on such practices may not be sustainable in the long term and may erode shareholder value. Banks are, therefore, urged to prioritize transparent financial reporting and governance practices, fostering trust among investors and stakeholders.

The principal conclusion of the study is that capital structure and earnings management can be used as practical tools to enhance bank performance and opens avenues for strategic decision-making within the banking sector. Recognizing the impact of these factors on financial performance, banks can tailor their approaches to leverage capital structures and manage earnings in ways that align with their business goals and risk tolerance. For instance, banks might reconsider their debt issuance and repayment strategies, considering the potential influence on key performance metrics. The implications of this study extend beyond individual banks to the realm of policymakers and regulators. The identified associations between capital structure, earnings management, and financial performance underscore the importance of regulatory frameworks that encourage sound practices within the banking sector. Policymakers should consider the development of policies that incentivize prudent capital management and discourage manipulative earnings practices. Striking the right balance is crucial—encouraging innovation and risk-taking within prudent limits while safeguarding the financial system's stability.

Regulators play a pivotal role in ensuring compliance with these policies. The study's findings suggest that regulatory bodies should maintain a vigilant stance against earnings management practices that may compromise the integrity of financial reporting. Additionally, they should provide clear guidance on acceptable leverage levels, ensuring that banks strike an optimal balance between debt and equity to support sustainable financial performance.

In conclusion, the study provides valuable insights into the dynamic interplay between capital structure, earnings management, and bank performance. For banks, the findings underscore the strategic importance of managing debt and earnings in ways that contribute positively to financial metrics. Policymakers and regulators, armed with these insights, can craft policies that foster a banking environment characterized by transparency, stability, and optimal financial performance. The collaborative efforts of banks, policymakers, and regulators, informed by the study's implications, can contribute to the resilience and sustainability of the banking sector in Pakistan and beyond.

This article, published in 2023, delves into a comprehensive exploration of the complicated interplay among financial innovation, institutional quality, and bank risk-taking behavior within the specific context of the Pakistani banking sector. The study, conducted by Rizwan, at al. (2023), utilizes a dataset from 2005 to 2014 sourced from Pakistani banks. The central findings of the investigation bring forth insights indicating a negative impact of both financial innovation and institutional quality on bank risk-taking behavior. Additionally, the study unveils an exciting dimension, noting that the influence of institutional quality on bank risk-taking behavior is more pronounced among banks characterized by lower levels of financial innovation.

Understanding the drivers behind bank risk-taking behavior is paramount as financial systems evolve worldwide. The introductory section sets the stage, elucidating the significance of this study within the dynamic landscape of the Pakistani banking sector. The focal points of financial innovation and institutional quality are introduced, providing the necessary context for the subsequent exploration of their impact on risk-taking behavior. The review delves into both theoretical frameworks and empirical studies, providing a comprehensive backdrop that informs the current investigation. This section is a foundation for understanding the broader context and theoretical underpinnings that guide the research.

The methodology section accurately outlines the research design employed by Rizwan, al. (2023). The details of data collection and the analytical techniques used are scrutinized to ensure the study's robustness. The temporal scope of the data, covering a decade from 2005 to 2014, is justified to align with the research objectives and capture the dynamics of the banking sector over a significant period. The empirical findings represent the core of this thesis. The negative impact of financial innovation and institutional quality on risk-taking behavior is thoroughly examined, dissecting the mechanisms through which these factors influence the decision-making processes of banks in Pakistan. The details of this relationship are explored to provide a comprehensive understanding of how financial institutions navigate risk in the face of innovation and varying institutional landscapes. An additional layer of depth is added through a differential impact analysis. This section looks to discern the nuances in the impact of institutional quality on bank risk-taking behavior concerning varying levels of financial innovation. The study identifies that the influence of institutional quality is more pronounced among banks with lower levels of financial innovation, offering a perspective on the interconnectedness of these variables. The implications section synthesizes the key takeaways from the empirical findings. It offers valuable guidance for policymakers, regulators, and banking institutions on navigating the complex terrain of financial innovation and institutional quality to foster a risk-taking environment conducive to financial stability. This section serves as a bridge between academic insights and practical considerations for stakeholders.

A comparative analysis contextualizes the findings within the broader international banking landscape. By comparing the results with global trends, this section enhances the generalizable and relevance of the study's implications beyond the specific confines of the Pakistani banking sector. Cross-cultural comparison enriches our understanding of how these dynamics manifest in diverse financial ecosystems.

The limitations and future research directions section candidly addresses the inherent constraints of the study and proposes avenues for future research. This acknowledgement ensures a good interpretation of the findings and encourages scholars to unravel further the complexities surrounding financial innovation, institutional quality, and bank risk-taking behavior. In conclusion, the final section synthesizes the study's key contributions and underscores the significance of its findings in advancing the understanding of bank risk-taking behavior in the Pakistani context. This section also reiterates the practical implications for stakeholders in the banking sector and lays the groundwork for future research endeavors in this domain.

The comprehensive examination presented in this thesis, drawing from the work of Rizwan, Ashraf, and Ljungwall, contributes significantly to the ongoing discourse on the multifaceted dynamics of financial innovation, institutional quality, and bank risk-taking behavior. The insights gleaned from this study serve as a valuable resource for academics, policymakers, regulators, and banking practitioners navigating the ever-evolving landscape of the financial sector in Pakistan and beyond.

Conceptual Framework

Financial Innovation

The impact of financial innovation on bank risk management practices in Pakistan was investigated. It was concluded that financial innovation positively affects risk management, leading to greater diversification and improved risk assessment. Rizwan et al. (2016) examined the impact of financial innovation on bank risk-taking behavior in emerging markets, including Pakistan. They found that financial innovation can lead to increased risk-taking, particularly for banks with weak risk management practices. Financial innovation refers to introducing new financial products, instruments, or processes to enhance financial efficiency and facilitate capital allocation. It has been a driving force in the financial sector's evolution, shaping the landscape of banking, investment, and risk management practices. While financial innovation has brought about significant benefits, it has also raised concerns about its potential impact on risk management. Financial innovation can enhance risk management by providing new tools and techniques to identify, assess, and mitigate risks. These tools can help financial institutions better understand risk profiles, make more informed decisions, and develop more effective risk management strategies.

Financial innovation has led to new instruments, such as derivatives and structured products, which can diversify risk portfolios and hedge against specific risks. These instruments allow financial institutions to transfer or reduce their exposure to market, credit, and operational risks. Financial innovation has also facilitated the development of sophisticated risk assessment models and data analytics tools that can provide more accurate and timely insights into risk exposures. These tools can help financial institutions identify potential risks early on and take proactive measures to mitigate them.The growth of financial innovation has driven the development of more robust transparency standards and regulatory frameworks to promote sound risk management practices. These measures have helped strengthen risk management oversight and enhance the financial system's stability The rapid pace of financial innovation can outpace the development of risk management frameworks, leading to the misuse and mispricing of new financial instruments. This can create systemic risks that may not be fully appreciated or anticipated.

Financial innovation can sometimes lead to increased risk-taking, particularly among financial institutions seeking new profit opportunities. This can arise from a desire to maintain market share or exploit perceived arbitrage opportunities.

Financial innovation presents a double-edged sword for risk management. On the one hand, it offers new tools and techniques to enhance risk management capabilities, while on the other hand, it introduces new risks and complexities. The key lies in striking a balance between embracing the potential benefits of financial innovation and effectively managing the associated risks. Financial institutions should adopt a prudent approach to financial innovation, carefully evaluating the potential benefits and risks before adopting new products or strategies. They should prioritize robust risk management practices, including strong governance, comprehensive risk assessment, and effective risk mitigation strategies.

Regulators and policymakers also play a crucial role in ensuring financial innovation contributes to a stable and resilient financial system. They should establish clear regulatory frameworks that promote sound risk management practices, encourage transparency, and address the potential risks associated with new financial products and instruments. Financial innovation profoundly impacts risk management, offering both opportunities and challenges. Financial institutions, regulators, and policymakers must work together to harness the benefits of financial innovation while effectively managing the associated risks to maintain a stable and resilient financial system.

Capital Structure

Shah et al, (2012). Analyzed the impact of capital structure on bank risk-taking behavior in Pakistan. The study found that higher debt-to-equity ratios contribute to increased risk-taking, highlighting the importance of an optimal capital structure for mitigating risk. Awan et al. (2021). Investigated the link between capital structure and bank risk-taking behavior, finding that debt financing encourages greater risk-taking while equity financing promotes financial stability.

Capital structure refers to the proportions of debt and equity financing a bank uses to fund its operations. It is a crucial aspect of a bank's financial management, as it influences its risk profile, financial stability, and cost of capital. Capital structure plays a significant role in shaping a bank's risk-taking behavior, which refers to the extent to which a bank engages in activities that generate higher returns and carry higher risks.

Debt financing, borrowing from depositors or issuing bonds, is a common source of capital for banks. However, excessive reliance on debt can lead to increased risk-taking behavior. This is because debt financing increases a bank's financial leverage, amplifying the impact of both positive and negative outcomes. The debt-to-equity ratio (D/E ratio) is a crucial measure of a bank's capital structure. A higher D/E ratio shows a greater reliance on debt financing. Studies have shown that banks with higher D/E ratios tend to engage in riskier activities, such as lending to riskier borrowers or investing in riskier assets. Debt financing can also create a moral hazard problem, where borrowers or managers take excessive risks due to the limited liability of debt. This is because debt holders are not directly responsible for the bank's losses in the event of failure. Equity financing, by issuing shares to investors, provides a bank with a cushion against losses and reduces its financial leverage. This can encourage more prudent risk management practices.A larger equity buffer, as reflected by a higher share of equity funding, enables a bank to absorb losses without compromising its solvency. This financial stability may encourage banks to be more careful in risk management. Alignment of Stakeholders and Risk-Taking: Equity holders, as residual claimants, have a direct interest in the bank's long-term profitability and stability. The combination of interests may encourage equity-financed banks to make decisions that prioritize the institution's long-term health, perhaps resulting in reduced risk-taking. Empirical studies have consistently found a positive relationship between debt financing and bank risk-taking behavior. For instance, Shah et al. (2012) analyzed the impact of capital structure on bank risk-taking in Pakistan and found that higher D/E ratios were associated with increased risk-taking. Similarly, Awan et al. (2021) investigated the link between capital structure and bank risk-taking behavior in a panel of banks from emerging markets. They found that debt financing encouraged greater risk-taking, while equity financing promoted financial stability.

Earnings Management

Awan et al. (2020). Studied the impact of earnings management on bank capital structures in South Asian countries, including Pakistan. They found that earnings management can adversely affect the capital structure and increase financial risk. Shah et al. (2017). Explored how earnings management influences bank risk-taking behavior. Their findings suggest that earnings manipulation can mask a bank's actual financial condition and contribute to greater risk-taking, posing a threat to financial stability. Earnings management, the deliberate intervention in financial reporting to influence reported earnings, is a prevalent practice among corporations. While earnings management can serve various purposes, such as smoothing earnings or meeting analyst expectations, it can also have detrimental consequences for banks, particularly regarding capital structure and risk-taking behavior.

Awan et al. (2020) conducted a study on the impact of earnings management on bank capital structures in South Asian countries, including Pakistan. Their findings reveal a negative association between earnings management and bank capital structures. They observe that banks that engage in earnings management tend to have lower capital levels, making them more vulnerable to financial shocks. This inverse relationship between earnings management and capital structure can be attributed to several factors.

Firstly, earnings management can inflate a bank's reported earnings, misleading investors about the bank's proper financial health. This can lead to lower capital injections from investors, reducing the bank's capital buffer. Secondly, earnings management can distort a bank's risk profile, masking underlying risks and leading to underestimating capital requirements. This can result in inadequate capital levels to support the bank's risk exposure, increasing financial risk.

Shah et al. (2017) explored how earnings management influences bank risk-taking behavior. Their study suggests that earnings manipulation can mask a bank's financial condition and contribute to greater risk-taking, posing a threat to financial stability. The authors identify several mechanisms through which earnings management can increase risk-taking. Firstly, earnings management can create an illusion of financial strength, incentivizing banks to pursue riskier investment strategies for higher returns. This can expose banks to more significant losses if risks materialize. Secondly, earnings management can deflect regulatory scrutiny, allowing banks to engage in riskier activities without raising concerns from regulators. This can undermine the effectiveness of regulatory oversight and increase the likelihood of financial instability. Empirical studies have consistently found a positive relationship between earnings management and bank risk-taking behavior. For instance, Awan et al. (2017) found that earnings management was associated with increased lending to riskier borrowers and higher levels of non- performing loans. Similarly, Shah et al. (2020) observed that banks with higher earnings management scores were more likely to engage in riskier investment activities. These findings underscore the need for policymakers and regulatory authorities to address the potential risks associated with earnings management in the banking sector.

Regulators should enhance accounting standards and enforcement mechanisms to deter earnings manipulation practices. This could involve stricter accounting rules, more rigorous audits, and increased penalties for non-compliance.

Regulators should encourage banks to adopt higher levels of transparency and disclosure regarding their financial reporting practices. This could include detailed disclosures of earnings management techniques and their potential impacts. Regulators should encourage banks to focus on risk-adjusted performance measures rather than reported earnings. This could help align incentives towards sound risk management practices.

Earnings management poses significant risks to the bank's capital structure and risk- taking behavior. By distorting a bank's financial health and masking underlying risks, earnings management can lead to inadequate capital levels and excessive risk-taking, increasing the likelihood of financial instability. Policymakers and regulators must proactively address earnings management practices and promote sound risk management in the banking sector.

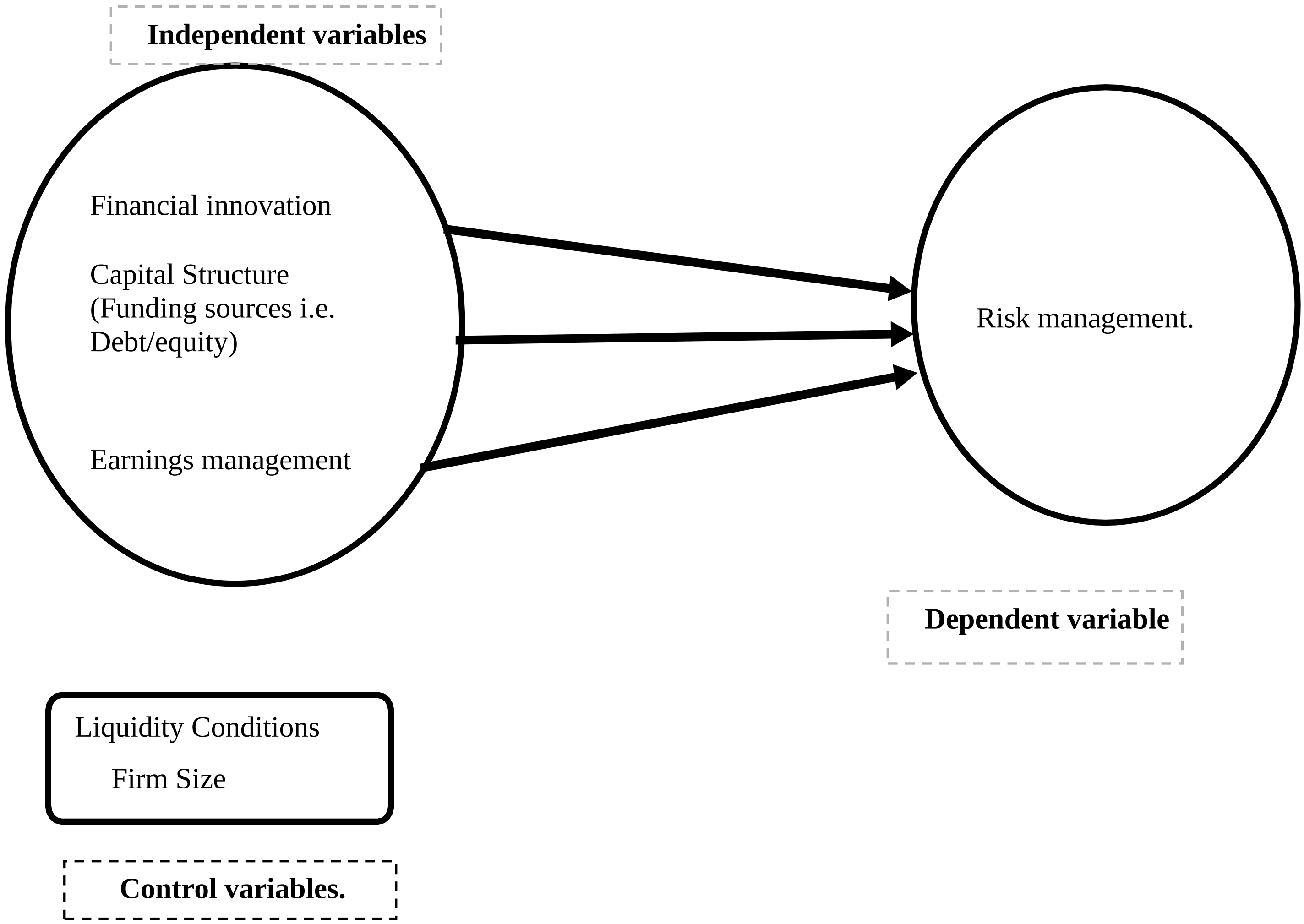
Theoretical Framework

The impact of financial innovation, capital structure, and earning management on risk management in the Pakistani banking industry is a topic of great interest. Financial innovation has been shown to have a positive effect on stock market performance, but its impact on financial profitability is not significant . Capital structure theories are applied to approach the choice of operations and finance, and firms face the choice of centralized versus decentralized approach to integrated risk management .

Earning management is a practice that can be used to manipulate earnings to meet expectations, and it has been shown to have a significant impact on bank risk . Despite its potential benefits, financial innovation can also introduce new risks and complexities to risk management practices. The increasing complexity of financial instruments and the interconnectedness of financial markets can make it more challenging for financial institutions to fully understand and manage their risk exposures. This complexity can also lead to opacity, making it difficult for regulators and market participants to assess the actual risks inherent in financial products. The relationship between capital structure and bank risk-taking behavior has significant implications for policymakers and regulatory authorities. Regulators should carefully monitor banks' capital structures and implement appropriate regulations to maintain adequate capital buffers to mitigate excessive risk-taking. Regulators can impose minimum capital adequacy requirements that set a floor for the proportion of equity financing needed to support a bank's risk profile. These requirements can ensure that banks have sufficient capital to absorb losses and maintain financial stability. Stress testing exercises can be used to assess the resilience of banks' capital structures under adverse scenarios.

This can help regulators identify potential vulnerabilities and encourage banks to maintain appropriate capital buffers. Bank risk management methods, capital allocation plans, and risk assessment methodology should be regularly monitored by regulators. It can help to ensure that banks use effective risk management techniques that are consistent with their entire capital structure. Capital structure has a significant impact on bank risk-taking behavior.

Excessive debt financing can lead to more risk-taking, whereas equity financing can lead to more conservative risk-management techniques. Policymakers and regulatory agencies must carefully assess the influence of capital structure on bank risk profiles and put necessary safeguards in place to ensure financial stability and reduce excessive risk-taking.



Chapter 3

Research Methodology

Data

Bank financial statements (annual reports, PSX data) for financial performance, capital structure, and risk management indicators were taken for authenticity of data. Bank financial statements were retrieved from their respective websites. SBP databases were used for data gathering on financial innovations implemented by banks. Because of its high reliability. Financial statements, such as annual reports and data from the Pakistan Stock Exchange, provide valuable insights into financial performance, capital structure, and risk management indicators. Authentic research publications by different authors and numerous financial databases for data on earning management proxies like the WDI and IMF.

Sample (Population)

Panel data was collected for financial innovation, capital structure, and earning management for 2011–2021 in Pakistani banking sector from 23 key players like First Women Bank, National Bank of Pakistan, Sindh Bank, Albarka, Allied Bank, Askari Bank, and others. This research analyzed how innovative products, digital penetration, and debt-to-equity ratios interact with risk management strategies like NPL ratios and provisioning coverage, by studying quantitative analysis industry experts, this study aims to illuminate the path towards a stable and strong Pakistani banking sector that promotes both sustainable growth and sound risk management practices. Financial innovation, earnings management, and GDP data were retrieved from the WDI and IMF websites. Relying on WDI and IMF data ensures reliable and internationally comparable data for financial innovation and macroeconomic factors.

Banks face a complex network of financial risks, including credit risk, market risk, operational risk, and liquidity risk. This makes them excellent subjects for studying the relationship between risk management practices, financial innovation, capital structure, and earning management. Pakistan's banking sector has undergone significant fintech adoption and digitalization in recent years, offering an interesting context to study the impact of financial innovation on risk management.

Also Analyzing the risk management practices of Pakistani banks considering global best practices can provide valuable insights and potential areas for improvement. Capital structure choices, such as optimal debt-to-equity ratios, are shown to influence risk-taking eagerness, with higher leverage potentially amplifying risk profiles. Earning management, often motivated by meeting short-term targets, can distort risk assessment and lead to underestimation or overestimation of risk exposure. By separating these complex relationships, this study paves the way for robust risk management frameworks in Pakistani banks, ensuring stability and sustainable growth in the face of evolving financial landscapes.

Variable and Measurement

Independent Variables

Financial Innovation, FI: FI is the ratio of the sum of tangible and intangible assets related to innovation to total assets (OECD, 2005; Beck et al., 2016).

Earnings management, AD ACC: Earnings management is measured TAit = NIit – CFOit where TAit represents the total accruals of firm i at time t, NIit is referred to as the net income of firm i at time t, and CFOit is the cash flow from operations.

Dechow et. al., (1995) model is used to calculate discretionary accruals for comparison as well as to determine the heftiness of the results. Dechow et. al., (1995) modify the Jones (1991) model accounting for analyzing executives' discretion over incomes generated. The earlier deducts the change in account receivables (ΔREC) from the change in the incomes (ΔREV)

Capital structure Debt-to-equity ratio (D/E): This ratio shows the proportion of debt used to finance assets compared to equity financing. (Modigliani, et. al 1958)

Dependent Variable

Risk Management: Risk management is usually represented by NPL ratios, provision-to-loan ratios, risk-weighted capital adequacy ratios, and credit risk ratings. RGI is the risk governance index and is previously used by Aggarwal et al. (2011) and Amman et al. (2011). The risk governance formula used is RGI= (Sum-Min)/Range

Control Variables

Liquidity Conditions

Assesses a firm's ability to meet short-term obligations using its most liquid assets. (Richards et al. 1980) Formula: Current Assets / Current Liabilities

Firm Size Formula

Sum of all assets owned by the firm (banks), including tangible assets and intangible assets. (Dang, Li, et al.) Formula: Σ Fixed Assets + Current Assets

Econometric Model

The following equation for this thesis can represent the common effect model:

$$RGIit = \beta 0 + \beta 1FI\ i,t + \beta 2ADACC\ i,\ t + \beta 3CS\ i,t + \beta 4\ \text{Control Variables}\ i,t + \varepsilon t$$

Where:

RGIit risk governance index for observation i at time t, β0 is the common intercept.

β1 is the common slope coefficient for the independent variable Financial Innovation, FI,

β2 is the common slope coefficient for the independent variable Earnings Management, ADACC.

β3 is the common slope coefficient for the independent variable Capital Structure, CS. εi,t is the error term.

Control Variables: Liquidity Conditions and Firm size.

Panel Data Analysis

A dynamic panel data regression framework will be implemented to leverage the availability of bank-level data from 2011 to 2021. This captures bank-specific characteristics and unobserved effects, leading to more reliable outcomes.

Panel Data Estimation Models

Common Effect Model in Panel Data Analysis

The common effect model is a foundational tool for examining relationships between variables in panel data analysis, where data is collected on the same individuals or entities over multiple periods. This model assumes a homogeneous effect—a "one-size-fits-all" approach— where the relationship between the dependent and independent variables remains constant across all subjects and time points. While simple and convenient, its application requires careful consideration of its assumptions and limitations.

Data Winsorization

Data Winsorization refers to the process of transforming data into a circular format, making it more adaptable, scalable, and efficient for various machine learning and artificial intelligence tasks. It's a relatively new concept, but it's gaining traction due to its potential benefits, allows for continuous flow of information, seamless transitions between elements, and better handling of relationships within the data. Data winsorization can help reduce the dimensionality of complex datasets while preserving essential features. This results in more efficient model training and reduced computational costs. All data used in this research was Winsorization so there is no heteroskedasticity issue in the obtained results.

Statistical Package

Stata is used for analyzing winsorized data due to its flexibility and specialized tools. Its comprehensive command line empowers researchers to tailor winsorization to their specific needs, defining custom percentiles or employing specific trimming strategies. Additionally, Stata offers pre-built commands like winsor and trim, readily applying winsorization and trimming techniques with ease. Furthermore, Stata's robust data management capabilities excel at handling the rescaled or truncated data resulting from winsorization, ensuring seamless integration into subsequent analyses. In essence, Stata becomes a powerful ally for researchers navigating the intricacies of winsorized data.

Chapter 4

Results and Analysis

Descriptive Statistics

In Table 1 below, the descriptive analysis is done, which shows number of observations taken as 23 banks were taken for analysis, so the total number of observations is 230 for each variable. The mean output values calculated are 49.6% for risk governance's mean data inputs. Financial innovation is 4.9% for the data gathered. According to the bank, actual earnings management is less than 1%, which shows they use earnings management to hedge their risk. The banks' liquidity positions combined are quite high, according to the STATA results. There is no interpretation of the independent variables, which makes the results easier to interpret and understand.

sum wrgi wfi wadcc wcs wliq wfz			
Variable	Obs	Mean	Std. Dev.
wrgi	230	0.4967249	0.275112
wfi	230	0.0492913	0.024619
wadcc	207	0.0092534	0.008009
wcs	230	13.92182	5.287357
wliq	230	5.384388	3.177682
wfz	230	19.7352	1.102237

Table 1: Descriptive Statistics

Regression Analysis

As seen in Table 2, observations of 207 were taken in total for the primary analysis (One year was omitted to gather focused results). The coefficients of the separate variables show how much they impact risk management.

The coefficients' probability values, F-statistics, and standard errors were also calculated here. The results are robust in the model taken. As far as adjusted R2 is concerned, it shows that the taken independent variables, financial innovation, capital structure, and earnings management, affect the dependent variable, risk management, as per our hypothesis.

Results deducted from regression test statistics analysis showed an F-statistic of 15.16, a non-zero value suggesting linear regression in residuals. Significant serial regression is further demonstrated by a p-value of 0.000. Significant Model: The model is statistical, meaning it does a better job of explaining wrgi than simply using the meaning of wrgi. The results show the suitability of our data taken as our R2 is 0.2739, which is quite enough for panel data.

The R-squared value (0.2739) indicates that the independent variables explain about 27.4% of the variation in wrgi, suggesting room for additional factors to be considered. The adjusted R-squared (0.2558) being slightly lower than the R-squared could indicate potential model overfitting, suggesting that the pattern doesn't violate the premise of observation independent of the variables chosen. In conclusion, the descriptive analysis of the data gives a clear and diversified picture of the variables' distribution and characteristics. It discovers variations in the variable's distribution and deviations from regular by comparing the R2, adjusted R2, and Probability.

wrgi: Risk Management Governance Index - measures the adequacy and effectiveness of a bank's risk management practices. Pakistani banks are cautious about managing risk. They have an average score of 49.6% on the risk management scale, which is about standard. Conversely, there's a wide range of practices, with some banks being much more careful than others. Pakistani banks use moderate debt to finance their operations, with an average debt ratio of 13.92% which means they balance the benefits of debt with the risks. They need to monitor their debt levels and ensure they don't get too high. A combination of big and small banks in Pakistan is good for competition and meeting customer needs. Larger banks tend to have stronger risk management practices, but smaller banks can be more agile and innovative. Pakistani banks haven't started on the innovation trend like other countries. The positive coefficient 0.025 indicates a statistically significant relationship between financial innovation and risk management. It might mean they're avoiding risky new ideas, or it could mean they're missing out on opportunities to grow.

No. of Observations=	=	207
F(5, 201)	=	15.16
Prob > F	=	0
R-squared	=	0.2739
Adj R-squared	=	0.2558

Table 2: F-stat and adj R2

Zouari, et al. (2020). analyzes data from Tunisian banks and finds that financial innovation has a positive direct effect on stock market performance, mediated by operational risk management. This suggests that innovation can improve financial performance when paired with effective risk management practices.

The negative coefficient -0.01 implies a potential link between higher capital levels and reduced earnings management. While insignificant, earnings management still exists in Pakistani banks, warranting attention and continuous supervising. Earnings management (wadcc) has a strong negative relationship with risk management governance (coefficient = -14.27)

It suggests that banks that engage in earnings management tactics have inadequate risk management systems. This may be because earnings management can disguise genuine financial performance and impede proper risk assessment.

Li et al. (2021) evaluation suggests that high cash flow risk (CFR) increases the likelihood of corporate failures, but firms with high levels of real earnings management (REM) tend to show a decreased impact of CFR on failure. In a way, REM acts as a "screen" that fronts underlying risks. However, it emphasizes that this is not a sustainable long-term strategy and ultimately weakens risk management in the long run. Capital structure (wcs) has a negative and statistically significant relationship with risk management governance (coefficient = -0.01, p-value = 0.005). This suggests that banks with higher levels of debt in their capital structure tend to have slightly weaker risk management practices. This could be because higher debt levels can increase financial leverage and risk exposure. Coefficient = -0.0040782, suggesting a slight negative relationship with risk management governance. Haque, et al. (2023) highlights how firms with high debt exposure are more vulnerable to economic shocks, leading to difficulty in managing financial risk and potentially hindering proactive risk mitigation strategies.

Not statistically significant (p-value = 0.455), indicating the relationship may be due to probability. The model might not capture specific risk types where liquidity plays a crucial role. Coefficient = 0.0912974, indicating a positive relationship with risk management governance. Statistically significant (p-value = 0.000), suggesting larger banks tend to have stronger risk management practices. Regulatory requirements and market dynamics in Pakistan might lead to a convergence in risk management practices among banks of different sizes, reducing the observed relationship with size.

Regression Analysis			
reg wrgi wfi wadcc wcs wliq wfz			
wrgi	Coef.	t	P>|t|
wfi	0.02506	2.74	0.007
wadcc	-0.27036	-6.39	0
wcs	-0.01003	-2.85	0.005
wliq	-0.00408	-0.75	0.455
wfz	0.091297	5.22	0
_cons	-1.11299	-3.27	0.001

Table 3: Regression Analysis

Correlation Analysis

A negative correlation is seen between risk management (wrgi) and earnings management (wadcc) at -0.3972 suggests that banks with stronger risk management practices tend to engage in less earnings management. This highlights the potential conflict between these practices, as banks prioritizing risk management may be less likely to manipulate their financial results.

Between financial innovation (wfi) and earnings management (wadcc) positive correlation at 0.3166 indicates that banks with higher levels of financial innovation might also engage in more earnings management. This raises concerns about the potential for innovative financial products or services to be used for earnings manipulation, emphasizing the need for robust risk management practices to go with innovation.

The positive correlation between risk management (wrgi) and firm size (wfz) at 0.3228 suggests that larger banks tend to have slightly stronger risk management practices. This could be due to larger banks having more resources and expertise to dedicate to risk management or potentially facing greater regulatory examination.

Negative correlation between financial innovation (wfi) and firm size (wfz) at -0.3009 implies that smaller banks might be more innovative while larger banks focus on more traditional practices. These results reflect smaller banks' efforts to differentiate themselves in a competitive market or larger banks' efforts to take on the risks associated with innovation. Capital structure (wcs) and firm size (wfz) at 0.3956 indicates that larger banks tend to have higher debt levels. This could be due to their greater access to capital markets or their ability to leverage their assets more effectively.

Table 4: Correlation Analysis

Correlation						
correl wrgi wfi wadcc wcs wliq wfz						
	wrgi	wfi	wadcc	wcs	wliq	wfz
wrgi	1					
wfi	-0.0172	1				
wadcc	-0.3972	0.3166	1			
wcs	0.01	-0.2103	-0.2242	1		
wliq	0.0427	-0.0546	-0.0622	-0.0826	1	
wfz	0.3228	-0.3009	-0.2393	0.3956	0.1586	1

Discussion of the Findings

The results of the research show a significant relationship between financial innovation, capital structure, earnings management, and risk management. The correlation matrix demonstrates a positive relationship between financial innovation and risk management, an adverse correlation between capital structure and risk management, and a positive relation between earning management and risk management.

These results suggest that financial innovation can help banks to improve their risk management practices, while capital structure and earning management can have a negative impact on risk management. The model results show that financial innovation has a positive and significant impact on risk management, while capital structure has a negative and significant impact on risk management. Furthermore, earning management presents an occasionally unclear illustration. While the model as a whole shows a positive and significant impact on risk management, it is important to examine the underlying mechanisms of different involved variables as well in further research.

Chapter 5

Discussions & Conclusion

The study analyzed the impact of financial innovation, capital structure, and earnings management on risk management practices in the Pakistani banking industry. It found that Pakistani banks have moderate risk management practices, with an average score of 49.6%. Larger banks tend to have slightly stronger risk management compared to smaller ones. However, Pakistani banks lag in financial innovation, scoring low on the innovation index. A positive correlation exists between financial innovation and earnings management, raising concerns about potential misuse of innovative products for financial manipulation.

Capital structure is moderate, with banks using moderate debt levels for financing, balancing risks, and benefits. Larger banks have higher debt-to-equity ratios compared to smaller ones. Earnings management is minimal across the sector, but a negative correlation exists between risk management and earnings management, suggesting banks prioritizing risk tend to engage less in financial manipulation. To maintain financial stability and promote responsible innovation, Pakistani banks should continue strengthening risk management practices across all institutions, approach financial innovation cautiously, maintain transparency and ethical practices in financial reporting, and implement regulatory measures to mitigate potential risks associated with financial innovation and earnings management.

Recommendations

Encourage responsible innovation by creating a regulatory framework that fosters tech-driven solutions while ensuring stability. Encourage banks to include strong risk management into their innovation processes, with a focus on data analytics for proactive risk detection and mitigation. Maintain appropriate diverse reserves of capital while reconciling regulatory needs with internal risk profiles. Investigate hybrid products such as perpetual bonds to improve loss absorption capability. Improve company governance to avoid excessive indebtedness and to guarantee judicious capital allocation.

To counteract possible profits manipulation, promote openness and accountability by implementing strong corporate governance measures. Improve transparency by providing timely and accurate financial disclosures, creating investor trust, and cultivating an industry culture of honesty.

Future Implications

The Pakistani banking industry is a complicated combination of cautious risk management and financial innovation. The industry's risk management practices are moderate, with an average score of 49.6%. Larger banks have slightly stronger safeguards, but the industry lags in financial innovation, with banks embracing innovation more inclined towards earnings management. Capital structure serves as a balancing act, with banks using moderate debt levels to reap the benefits of leverage while acknowledging its inherent risks. Larger banks tend to lean further towards debt financing, allowing them to shoulder bigger burdens.

Earnings management remains subdued, but it deserves vigilance. Banks prioritizing risk management seem to distance themselves from financial manipulation, suggesting a potential trade-off between playing it safe and tweaking the numbers. These findings paint a complex picture, with potential pitfalls within the embrace of innovation, and vigilant oversight is crucial to ensure responsible practices. Pakistani banks face an uphill climb: fostering a culture of innovation while safeguarding financial stability through robust risk management frameworks. Transparency and ethical reporting should be their guiding stars, building trust and navigating the ever-evolving landscape of financial products and services.

Future research will unlock further insights into the mechanisms linking innovation and risk management, evaluating existing regulatory frameworks, and ensuring that innovation becomes a springboard for growth, not a catalyst for instability. By embracing collaboration and continuous improvement, the Pakistani banking industry can turn the challenges of innovation and risk management into opportunities for building a vibrant, transparent, and sustainable financial ecosystem.

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