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The Impact of Capital Structure on Islamic Bank's Profitability Evidence From the Top Islamic Finance Countries for the Period 2003-2022

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Dedication

With sincere gratitude, I dedicate this work to……..

*My beloved **Parents**, whose unwavering support and endless encouragement have been the foundation of all my achievements. My **siblings** have always stood by me with love and laughter, and My Uncles **Mohameden Fall** and **Cheikh Tourad Bayo**, whose guidance and wisdom have been invaluable.*

*To my second father, **Batty Boidiel**, for his insightful advice and continuous belief in my potential.*

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Cheikh Tourad Bayo

Abstract

The main objective of this study is to examine the impact of capital structure on the profitability of Islamic banks, focusing on the top Islamic finance countries: Indonesia, Malaysia, Saudi Arabia, the United Arab Emirates, and Qatar, using annual data over a period of 20 years from 2003 to 2022. The study employs three profitability metrics: Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM), while the capital structure is measured by the equity-to-total assets ratio (ETA) and the deposits-to-total assets ratio (DTA). Utilizing panel data regression models, the relationships between these variables are analyzed. Overall, the empirical results indicate that a higher equity ratio (ETA) has a positive and significant impact on the profitability of Islamic banks, as measured by ROA, ROE, and NPM. In contrast, the deposits-to-total assets ratio (DTA) shows a less consistent influence on profitability. These findings suggest that well-capitalized Islamic banks with higher equity levels perform better. The results provide critical insights for policymakers, bank managers, and investors in the Islamic finance sector, highlighting the importance of optimizing capital structures to enhance financial performance while adhering to Shariah principles.

Keywords: capital structure, profitability, Islamic banks, equity-to-total assets ratio, deposits-to-total assets ratio, Return on Assets, Return on Equity, Net Profit Margin, top Islamic finance countries

Résumé

L'objectif principal de cette étude est d'examiner l'impact de la structure du capital sur la rentabilité des banques islamiques, en se concentrant sur les principaux pays de la finance islamique : Indonésie, Malaisie, Arabie Saoudite, Émirats arabes unis et Qatar, en utilisant des données annuelles sur une période de 20 ans, de 2003 à 2022. L'étude utilise trois mesures de rentabilité : Le rendement des actifs (ROA), le rendement des capitaux propres (ROE) et la marge bénéficiaire nette (NPM), tandis que la structure du capital est mesurée par le ratio capitaux propres/actifs totaux (ETA) et le ratio dépôts/actifs totaux (DTA). Les relations entre ces variables sont analysées à l'aide de modèles de régression de données de panel. Dans l'ensemble, les résultats empiriques indiquent qu'un ratio de fonds propres plus élevé (ETA) a un impact positif et significatif sur la rentabilité des banques islamiques, telle que mesurée par le ROA, le ROE et le NPM. En revanche, le ratio dépôts/actifs totaux (DTA) a une influence moins cohérente sur la rentabilité. Ces résultats suggèrent que les banques islamiques bien capitalisées et dotées d'un niveau de fonds propres plus élevé obtiennent de meilleurs résultats. Les résultats fournissent des indications essentielles pour les décideurs politiques, les directeurs de banque et les investisseurs dans le secteur de la finance islamique, en soulignant l'importance d'optimiser les structures de capital pour améliorer les performances financières tout en adhérant aux principes de la charia.

Mots clés : structure du capital, rentabilité, banques islamiques, ratio capitaux propres/actifs totaux, ratio dépôts/actifs totaux, rendement des actifs, rendement des capitaux propres, marge bénéficiaire nette, principaux pays du secteur de la finance islamique.

الملخص

الهدف الرئيسي من هذه الدراسة هو دراسة تأثير هيكل رأس المال على ربحية البنوك الإسلامية، مع التركيز على أكبر دول التمويل الإسلامي: إندونيسيا، ماليزيا، المملكة العربية السعودية، الإمارات العربية المتحدة، وقطر، باستخدام بيانات سنوية على مدى 20 عامًا من 2003 إلى 2022. تستخدم الدراسة ثلاثة مقاييس للربحية: العائد على الأصول (ROA) والعائد على حقوق الملكية (ROE) وصافي هامش الربح (NPM)، بينما يُقاس هيكل رأس المال بنسبة حقوق الملكية إلى إجمالي الأصول (ETA) ونسبة الودائع إلى إجمالي الأصول (DTA). ويتم تحليل العلاقات بين هذه المتغيرات باستخدام نماذج انحدار بيانات السلاسل الزمنية المجمعة. وبشكل عام، تشير النتائج التجريبية إلى أن ارتفاع نسبة حقوق الملكية (ETA) له تأثير إيجابي وهام على ربحية البنوك الإسلامية، كما تم قياسها من خلال العائد على الأصول، العائد على حقوق المساهمين والحصول على صافي الأرباح. وفي المقابل، تُظهر نسبة الودائع إلى إجمالي الأصول تأثيرًا أقل ثباتًا على الربحية. وتشير هذه النتائج إلى أن أداء البنوك الإسلامية ذات رأس المال الجيد التي تتمتع بمستويات أعلى من حقوق الملكية أفضل. وتوفر النتائج رؤى مهمة لصانعي السياسات ومديري البنوك والمستثمرين في قطاع التمويل الإسلامي، وتسلط الضوء على أهمية تحسين هياكل رأس المال لتعزيز الأداء المالي مع الالتزام بمبادئ الشريعة الإسلامية.

الكلمات المفتاحية: هيكلة رأس المال، الربحية، المصارف الإسلامية، نسبة حقوق الملكية إلى إجمالي الأصول، نسبة الودائع إلى إجمالي الأصول، العائد على الأصول، العائد على حقوق الملكية، صافي هامش الربح، الدول الرائدة في التمويل الإسلامي.

Table of Contents

Table of Contents

Table of Contents

List of Tables

List of Appendices

List of Abbreviations

List of Abbreviations	
DTA	Deposit to Total Assets
ETA	Equity to Total Assets
DAR	Debt-to-Assets Ratio
ROA	Return on Assets
ROE	Return on Equity
NPM	Net Profit Margin
FDR	Financial-to-Deposit Ratio
DER	Debt-to-Equity Ratio
EPS	Earnings Per Share
DFA	Distribution Free Approach
GCC	Gulf Cooperation Council
NIMA	Net Interest Margin per Asset
DFL	Degree of Financial Leverage
GLS	Generalized Least Squares
NI	Net Income
ICBs	Islamic Commercial Banks
NPF	Non-Performing Financing
CAR	Capital Adequacy Ratio
FSS	Financial Self-Sufficiency
BPRS	Sharia People's Financing Bank
OJK	Financial Service Authority
ER	Equity Ratio
EM	Equity Multiplier
LTA	Loan-to-Asset Ratio
OLS	Ordinary Least Squares
WLS	Weighted Least Squares
MRA	Moderated Regression Analysis

Chapter One: Introduction

1. Preface

2. Hypotheses of the Study

3. Objectives of the Study

4. Importance of the Study

1.1. Preface

The financial landscape has undergone significant transformations over the past few decades, with Islamic banking emerging as a unique and vital component of the global financial system. Islamic banking, governed by the principles of Shariah law, sets itself apart from conventional banking through its prohibition of interest (riba) and its strong emphasis on ethical investments, profit-sharing, and risk-sharing mechanisms (Ezeh & Nkamnebe, 2019). This distinctive approach aligns financial practices with Islamic ethical standards and offers an alternative financial model that has gained substantial traction worldwide, including in non-Muslim majority countries.

The period from 2003 to 2022 has been particularly dynamic and challenging for Islamic finance, witnessing rapid growth, regulatory advancements, and increasing integration into the global financial system (Bitar et al., 2018). Islamic banks operating in various economic environments have had to navigate complex challenges related to their capital structures. These challenges, unique to Islamic banks, include the prohibition of interest (riba) and the need to balance ethical investments, profit-sharing, and risk-sharing mechanisms. The relationship between capital structure and profitability is crucial and intricate for Islamic banks, as it influences their financial stability, operational efficiency, and ability to compete with conventional banks.

This study holds significant importance as it delves into the impact of capital structure on the profitability of Islamic banks in the top Islamic finance countries: Indonesia, Malaysia, Saudi Arabia, the United Arab Emirates, and Qatar. These countries, at the forefront of Islamic banking development, set benchmarks for Shariah-compliant financial practices and regulatory frameworks. By examining these leading Islamic finance markets, this research aims to provide a comprehensive understanding of how different components of capital structure—namely, equity and deposits—affect the financial performance of Islamic banks, thereby contributing to the advancement of knowledge in this field.

Understanding the optimal capital structure is vital for Islamic banks as it affects their cost of capital, risk profile, and profitability. Unlike conventional banks, Islamic banks cannot rely on interest-based debt and must employ alternative financing methods such as profit-sharing investment accounts and Sharia-compliant debt instruments. These unique constraints make it imperative to study how these banks can balance their equity and deposits to achieve sustainable growth and profitability.

The insights gained from this study are significant for the academic literature on Islamic finance and offer practical recommendations for bank managers, investors, and policymakers. By identifying the key determinants of profitability in Islamic banking, this research will aid in developing strategies that enhance financial performance while adhering

to Shariah principles. Additionally, this study will provide valuable information for regulatory bodies to formulate policies supporting Islamic banks' growth and stability.

In summary, this research endeavors to bridge the gap in understanding the interplay between capital structure and profitability in Islamic banks, offering evidence-based insights that can drive the future success of Islamic finance in a rapidly evolving global economy.

1.2. Hypotheses of the Study

-H1: A significant positive relationship exists between the equity-to-total assets ratio (ETA) and Islamic banks' return on assets (ROA).

-H2: A significant positive relationship exists between the equity-to-total assets ratio (ETA) and Islamic banks' return on equity (ROE).

-H3: A significant positive relationship exists between the deposits-to-total assets ratio (DTA) and Islamic banks' net profit margin (NPM).

-H4: Islamic banks' capital structures significantly impact their profitability metrics (ROA, ROE, NPM).

1.3. Objectives of the Study

The primary objective of this study is to analyze the impact of capital structure on the profitability of Islamic banks across the top Islamic finance countries. Specific objectives include:

-To determine the relationship between equity levels and profitability in Islamic banks.

-To assess how deposits impact the profitability of Islamic banks.

-To compare the capital structure of Islamic banks in different countries and identify best practices.

-To provide recommendations for optimizing the capital structure of Islamic banks to enhance profitability.

1.4. Importance of the Study

This study is significant for several reasons:

-Theoretical Contribution: It expands the existing knowledge on the relationship between capital structure and profitability in Islamic banking, a relatively under-researched area.

-Practical Implications: The findings can guide Islamic bank managers and policymakers in optimizing their capital structures to improve financial performance.

-Policy Formulation: Insights from this study can inform regulatory bodies about the unique financial dynamics of Islamic banks, aiding in the development of supportive regulatory frameworks.

-Investor Insights: By understanding the profitability dynamics of Islamic banks, investors can make more informed decisions regarding their investments in this sector.

Chapter Two: Theoretical Framework

2.1. Capital Structure in Islamic Banking

2.1.1. Introduction

2.1.2. Definition of Capital Structure

2.1.3. Importance of Capital Structure in Islamic Banks

2.1.4. Components of Capital Structure

2.1.5. Conclusion

2.2. Profitability in Islamic Banking

2.2.1. Introduction

2.2.2. Definition of Profitability

2.2.3. Importance of Profitability in Islamic Banking

2.2.4. Measurement and Evaluation of Profitability in Islamic Banking

2.2.5. Conclusion

2.3. Relationship Between Capital Structure and Profitability in Islamic Banking

2.1. Capital Structure of Islamic Banking

2.1.1 Introduction

Islamic banking, which operates under the guidelines of Shariah law, requires a distinctive approach to capital structure (Yasoa et al., 2020). This chapter investigates the intricate aspects of capital structure in Islamic banks, exploring the ongoing discussion about whether to mirror conventional practices or maintain a clear distinction. While some advocate for adopting conventional structures to improve success, others stress the importance of upholding Islamic principles to set Islamic banking apart from its non-Islamic counterpart.

A key difference lies in the prohibition of riba (interest), gharar (uncertainty), and maysir (gambling) – fundamental principles of Islamic finance that govern financial transactions and structures (Abasimel, 2023). Renowned Shariah scholar Taqi Usmani advocates adhering to Shariah while providing service quality comparable to conventional banks, highlighting the possibility of achieving this balance. This chapter, therefore, delves into the complexities of capital structure within this framework, navigating the influence of conventional financial systems while adhering to the principles of Islamic finance.

2.1.2 Definition of Capital Structure

A company's capital structure defines its funding sources for operations and growth (Mujiatun et al., 2021). It primarily consists of two main components: debt and equity, each playing distinct yet crucial roles in a company's financial framework (Durairaj, 2002). It is almost impossible for a company to function without utilizing at least one, if not both, of these financing methods. In conventional finance, debt is typically viewed as a loan agreement with a predetermined interest rate and repayment schedule, representing a specific financing structure (Gelpern et al., 2023). However, Islamic finance approaches debt differently, particularly through "Al-Qard" (interest-free loans) or "debt-based modes" for acquiring assets on credit. The Quran prohibits interest (riba) (Al-Baqarah 2:275, 3:130, Al-Imran 130), necessitating alternative methods for Islamic banks. These methods replicate the economic function of conventional debt without involving interest payments, transferring credit risk to the borrower. Debt-based financing in Islamic finance provides individuals with accessible means to meet their financial needs through manageable periodic repayments.

In contrast, equity financing in Islamic finance is based on the principle of "mudharabah," establishing a risk-profit sharing arrangement between the bank and its clients, similar to a joint stock partnership under "musharakah" and "mudharabah" contracts (Hasan, 2023). In "mudharabah," the bank acts as the sole capital provider ("Shahib al mal"), while the other party assumes the role of the entrepreneur ("Saheb al Amal"). Although "Al-Qard" and

debt modes share similarities with these equity-based concepts, they differ in ownership and risk-sharing dynamics. As mentioned, the capital structure refers to the Shariah contract modes associated with equity and debt rules in determining the most suitable funding allocation. To ensure the Islamic bank specifies its mode of raising these funds, it must recognize the concept of La'rah, which involves translating something specific into another specific thing, highlighting the importance of closely aligning the translated mode with the original mode. This is crucial in Shariah contracts as they have specific forms of agreement.

Moreover, substituting conventional debt and credit with halal-compliant debt modes is significant. The capital structure plays a vital role in determining the level of security or guarantee, allocating assets to fund sources according to their purpose and type. A higher allocation of assets ensures protection and easy recovery in case of failure or liquidation, aligning with the concepts of asset Murabaha and secured credit, resembling the debt mode (Hassan, 2020). These concepts aim to find alternative debt solutions that avoid interest while achieving similar functions with reduced risk. The capital structure also holds potential for pioneering research on how Shariah contracts function economically in different countries. Research in Islamic finance is essential for developing solid alternatives to conventional methods, highlighting the need for detailed alignment between translated and original modes in Shariah contracts. Substituting conventional debt and credit into debt modes with specific halal forms and credit agreements is essential. Additionally, capital structure is crucial in determining the security level or guarantee, involving asset allocation for fund sources according to their purpose and type. Lastly, it has significant potential to support innovative research on how Shariah contracts effectively operate with their proper economic functions across various countries. Given these important factors, research in Islamic finance requires time to develop robust alternatives to conventional methods.

2.1.3 Importance of Capital Structure in Islamic Banks

While the capital structure, the combination of debt and equity financing, is essential for all banks, it presents distinct challenges for Islamic banks. Unlike conventional banks that depend on interest-based lending, Islamic banks adhere to Sharia principles, which prohibit interest and emphasize risk-sharing. This makes defining debt and equity more intricate. The wide variety of Islamic contracts and the lack of interest-based benchmarks create uncertainty in categorizing financing instruments. Despite these challenges, optimizing the capital structure is crucial for Islamic banks to reduce their cost of capital and enhance shareholder value. Striking this balance is essential in a competitive market where capital costs directly influence profitability and market share. However, the evolving nature of Islamic finance and differing national regulations make determining the optimal capital structure an

ongoing challenge for Islamic banks. They must navigate these complexities to ensure financial stability, attract investors, and stay competitive in the global banking industry.

2.1.4 Components of Capital Structure

Jilani outlined the conditions for mudharabah to be an ideal form of equity for Islamic banks. This can be achieved through investment accounts with profit-sharing, the execution of unrestricted Wakalah, and by increasing the spread between the return-on-investment accounts and the rate of return in the sectors where the bank is investing. This type of equity aligns well with the current business model of Islamic banks and facilitates a gradual transition from debt to equity financing (Purnomo et al., 2024; Yustiardhi et al., 2020).

Investment accounts that offer unrestricted and restricted profit-sharing are deemed the most effective form of equity. Due to their deposit-like nature, they carry no liability, provide the bank with new capital, and attract customer funds. Additionally, investors bear some of the responsibility for potential income loss, reducing the bank's burden.

The primary drawback of common and preferred shares is the potential loss to customers during liquidation. If the bank is liquidated, common and preferred shareholders might only receive a portion of their capital back, or none at all. The only capital the bank owes is the issued capital, making this form of equity unsuitable for new Islamic banks due to the high risk involved (Akhmadjonov et al., 2021).

Equity is the main component of the capital structure for Islamic banks. Currently, several types of equity are used, including common shares, preferred shares, and investment accounts with unrestricted and restricted profit-sharing. Common and preferred shares function similarly to conventional equity: common shares involve high liability with potentially high returns, while preferred shares offer lower liability with stable returns. The key difference lies in how capital is acquired: common shares bring new capital by issuing shares to the public, whereas preferred shares are a form of debt from selected customers.

a. Equity

A simple illustration is if a shareholder lends £100 to a company to purchase and sell a particular product. The shareholder agrees to receive 50% of any profits from the venture and will accept the return of his £100 without any additional amount. In this scenario, the £100 does not constitute debt because the product is not directly linked to the funds; the £100 is considered an asset in the form of cash with a profit-sharing agreement. This arrangement is the closest equivalent of equity in debt, compared to modern debt-equity structures, and it is well-known that using debt and interest to finance businesses is prohibited (Haram) in Islam.

Given that there is no separate asset or different income flow compared to debt, it has been argued that there is no concept of equity as a distinct form of capital. Rather, equity is seen as a source of finance for a Mudaraba contract, where Mudaraba represents a deposit of money (or an asset) with a profit-sharing agreement for using the funds in a specific venture (Purnomo et al., 2024).

The concept of equity is relatively new in Islamic banking. In conventional banking, equity represents ownership and forms a significant part of capital, permanent and not repaid. If a company has only one equity shareholder and is subsequently wound up, the total assets of the company minus its liabilities would be the equity capital returned to the shareholder. In Islamic finance, equity is not considered a separate asset that generates a different flow of income and expenditure from the debtor's debt. Therefore, the concept of equity and debt applies only to interest-free loans. Debt is essentially an obligation to repay the current and future receipt of wealth with a specified profit amount.

b. Debt

Debt-based transactions can involve Musharaka or venture capital to start-up companies (Ahmad et al., 2021). This method involves providing shareholder funding for a new company and creating a joint venture. It is often more tax-efficient than issuing debt because losses can be carried forward to offset other income. Debt can also be acquired through an agreement known as Qard, a contract where money is lent with the expectation of receiving a greater return. The returns on these contracts are usually predetermined, clearly identifying them as debt or profit and loss. While debt is a common form of capital in Islamic banking, the capital structure tends to favor equity due to the disadvantages of debt financing previously mentioned.

The justification for interest in conventional debt differs from that in debt-based transactions. For conventional debt, interest is permissible as a cost for using money, fitting into one of the previously mentioned contract categories.

Debt includes borrowing from external sources. Capital structure theory suggests that a firm's value can be enhanced through the appropriate use of debt by finding an optimal balance in the capital structure. Tax shields are relevant here, as interest payments on debt reduce taxable income, resulting in tax savings for the corporation. It is generally accepted in finance that firms should use debt until the tax shields from additional borrowing are equal to the cost of financial distress, which is the reduction in firm value due to potential bankruptcy or insolvency.

c. Profit-Sharing Investment Accounts

Entities seek financing services that offer profitability and risk-sharing benefits. Conversely, Islamic banks need financing to mitigate credit and investment risks from their capital funds. This can be achieved through profit and loss sharing (PLS) contracts (Grassa et al., 2021). PLS is central to Islamic finance, based on a profit and risk-sharing system. This arrangement means that the depositor and the bank share the agreed-upon profit or loss from the investment the depositor finances. From a capital structure perspective, PLS deposits can be viewed as equity financing in the event of losses but as off-balance sheet financing in the case of profits. This is because profits are considered margins on deposit accounts, while PLS accounts are unrestricted investment accounts where profits and losses are shared.

Regarding the current state of PLS financing instruments, the literature does not provide specific findings on how PLS financing in capital budgeting can be distinguished from Mudharabah debt and equity financing. An International Monetary Fund Working Paper (WP/02/184) suggests that PLS deposits can hedge against liquidity risk and interest rate changes. This is because, in conventional terms, they function like savings accounts and can be withdrawn at any time. However, Islamic banks may create a one-year interest rate structure to emulate the prevailing rate of similar conventional debt (Widarjono et al., 2022).

2.1.5 Conclusion

Islamic banking encounters a distinct challenge in optimizing its capital structure due to Shariah principles' restrictions. Equity financing, via profit-sharing investment accounts and Musharaka, aligns well with these principles. However, the lack of conventional debt instruments necessitates exploring alternative solutions such as Murabaha and Qard. Finding the right balance between these instruments is essential for Islamic banks to maintain financial stability, attract investors, and stay competitive. As the industry progresses, ongoing innovation and adaptation within Shariah boundaries will be crucial for navigating the complexities of capital structure and achieving sustainable growth in the global banking landscape.

2.2. Profitability in Islamic Banking

2.2.1 Introduction

Over the past thirty years, Islamic banking has proven to be an effective and efficient contributor to economic development. This effectiveness is evident in the industry's rapid growth, extensive geographical reach, and widespread acceptance by both the Muslim Ummah and the global community. Islamic banking is not confined to Muslim-majority countries or Muslim populations; it is also being adopted in Western countries through various

channels, such as Islamic windows, fully-fledged Islamic banks, and Islamic subsidiaries. The scale of operations varies, with some banks operating on a small scale, while larger banks have integrated into the conventional banking system as significant players. Due to its rapid growth, efficiency, and acceptance, Islamic banks are now being compared not only to their conventional counterparts but also to other financial institutions like mutual funds and insurance companies. This comparison prompts several questions about the operations and efficiency of Islamic banks. A fundamental question is whether Islamic banks are as profitable as, or more profitable than, conventional banks. To address this question, empirical evidence is necessary, which can be gathered by assessing the profitability of Islamic banks.

2.2.2 Definition of Profitability

To delve into the issue of profitability, it is essential to understand the concept within the context of business organizations. Profitability is defined as a firm's ability to generate revenue exceeding its expenses (Hawawini & Viallet, 1983). Conventional economic theory posits that maximizing wealth is the primary reason for engaging in business activities. Islamic economic theory also recognizes the importance of profitability but views it as a means to an end, with the ultimate goal being the community's economic well-being. In Islamic banking, profitability signifies the surplus of revenue over expenses used to equitably enhance the community's economic welfare without exploiting any part of the community. Another aspect of profitability in Islamic banking is that profits must be generated ethically and morally according to Islamic law. This precludes many conventional revenue-generating methods, such as charging interest and producing haram goods and services, negatively impacting society's social fabric.

While the definitions of profit and profitability in conventional and Islamic economic theories are similar, they differ in how revenue is obtained and utilized. This difference underscores that profitability through interest-based finance or speculative economic activities is undesirable in Islamic banking (Ahmad, 2002). Such forms of finance are viewed as exploiting vulnerable members of society and contributing to an unequal distribution of wealth and resources. Speculative activities often generate revenue at others' expense and involve high risks, harming the financier and the community. In contrast, Islamic economic theory emphasizes productive economic activities that promote community development and economic well-being. This principle is reflected in the Prophet Muhammad's (SAW) prayer for Allah's assistance in facilitating beneficial actions (Hasan & Lewis, 2007).

2.2.3 Importance of Profitability in Islamic Banking

In modern economic theory, a financial firm or organization is considered well-positioned if it can maximize profit to achieve its goals. This principle also applies to Islamic

financial institutions, despite the differences in economic and financial theory between Western and Islamic economics. Maximizing profits aligns with Islamic teachings, which aim to benefit the Ummah. Firms are expected to achieve success under Shariah principles in favorable conditions. Thus, maintaining profitability is essential for preserving resources and competencies. Islamic financial institutions should maintain moderate profitability, considering the opportunity cost of maximizing shareholder wealth. This involves using resources effectively while fulfilling their responsibility to provide funding and generate profits.

The primary goal of business firms, whether conventional or Islamic financial institutions, is to maximize owners' wealth, reflected in the firm's share prices (Risman & Susanti, 2023). In the Islamic economic system, the main objective of business and wealth is to seek blessings from Allah SWT for success in this world and the hereafter (Bhuiyan et al., 2020). Therefore, Islamic businesses, particularly financial institutions, must maintain a healthy level of profitability to fulfill their fiduciary duty. Eroded profitability would negatively impact the firm's financing and investment activities. This is crucial for Al-Mudharib (the fund provider) when financing Al-Murabahah contracts through mark-up provisions, significantly impacting national income. Consequently, monitoring profitability and its fluctuations is vital (Saiful et al., 2004). In the context of Islamic banking as a tool for social and economic development, profitability is significant at both the microeconomic and macroeconomic levels.

2.2.4 Measurement and Evaluation of Profitability in Islamic Banking

Measuring and evaluating profitability in Islamic banking often requires financial and non-financial indicators. One example of a non-financial indicator is the quality of service the bank provides (Qatawneh & Bader, 2020). Over the past decades, the banking industry has evolved significantly, with considerable changes in operations in both conventional and Islamic banking systems (Wang & Wang, 2021). However, the evolution in Islamic banking has focused more on developing Shariah-compliant instruments and financial engineering, structuring only those financial instruments based on Islamic principles (Aman, 2020). Consequently, measuring and evaluating profitability in Islamic banking involves an additional step compared to the conventional system. This step includes comparing profitability across different Shariah-compliant financing modes and assessing whether their true spirit has implemented them.

a. Key Performance Indicators (KPIs)

According to a financial service and performance management software company, KPIs are metrics that quantify a specific desired attribute or quality directly related to a targeted outcome, which can then be measured and translated into value (Ntshwene et al., 2022). KPIs are used to define and evaluate the success of achieving certain objectives. They also help

brainstorm how a targeted objective can be translated into a measurable quality attribute. KPIs are extensively used to measure the performance and quality of a service.

What distinguishes Islamic banking from conventional banking is its unique principles and practices. Consequently, the KPIs used to measure its performance will differ slightly in weight. Understanding the unique environment of Islamic banking practices, its various objectives, and its distinct financial processes and contracts is essential for identifying and understanding the appropriate KPIs. This understanding will also provide a clearer picture and make the measurement outcomes more reliable in assessing the performance of Islamic banks.

b. Return on Assets (ROA)

Return on Assets (ROA) is a key financial indicator used to measure the profitability resulting from the utilization of a bank's assets. It assesses the efficiency of an Islamic bank's intermediation process in allocating financial resources to various investment options to maximize returns. ROA is calculated by dividing net income after taxes by the average total assets for the period (Massadeh et al., 2021). It is expressed as a percentage. Islamic commercial banks consistently apply the basic concept of ROA, as they must manage assets to meet expectations.

In applying ROA, Islamic banks must consider various macroeconomic factors, industry and market conditions, public policy impacts, and the consistency of monetary policy implementation. ROA measures the income generated by the asset position. The first step in measuring ROA is to analyze revenue from interest rate-sensitive assets (ISSA), as these assets are directly affected by market interest rate changes. The next step is to measure the economic value added (EVA) of the ISSA, emphasizing the ability of these assets to create profitability (Saeed et al., 2023). In conventional banking theory, ROA primarily evaluates the effectiveness of asset utilization in generating revenue. This is similar to EVA, which compares the cost of capital with the expected results over a certain period.

c. Return on Equity (ROE)

Return on Equity (ROE) is a crucial measure of financial performance that evaluates a firm's efficiency in generating profit from each unit of shareholders' equity. This is calculated by dividing net income by the average shareholders' equity (Hussein & Nounou, 2022), with the result typically expressed as a percentage. In conventional banking, a typical ROE is around 15%, and anything lower may indicate financial distress (Budianto & Dewi, 2023) since equity capital is considered an expensive form of finance. In contrast, through Mudarabah and Musharakah contracts, Islamic banking requires financial institutions to share profits with depositors. It has been suggested that ROE is insufficient for evaluating the financial

performance of Islamic banks due to the lack of a clear relationship between equity and its cost or between investment and generated revenue (Kabir & Perron, 2008). Applying this metric to Islamic banking without a specific ROE measure is challenging, so alternative measures might be needed as proxies for ROE.

d. Net Profit Margin (NPM)

The net profit margin (NPM) is a key performance indicator that measures the effectiveness and efficiency of an Islamic bank in converting its revenue into earnings (Chouaibi et al., 2022). It represents the percentage of profit earned over revenue, with the profit portion meeting Shariah requirements. Despite being a good indicator of a bank's profitability relative to the resources utilized, the net profit margin has received less attention than ROA and ROE.

2.2.5 Conclusion

While Islamic banking shares a common goal with conventional banking regarding profitability, it operates within a distinct framework governed by ethical and moral principles. The focus goes beyond profit maximization, aiming to enhance the community's economic well-being and ensure adherence to Shariah law.

Assessing profitability in Islamic banking necessitates a multifaceted approach that includes financial metrics such as ROA, ROE (with specific considerations), and NPM, as well as non-financial indicators like service quality. Choosing the right KPIs is essential to accurately evaluating performance within Islamic finance's unique context.

Ultimately, profitability in Islamic banking is a means to achieve broader societal objectives, fostering equitable wealth distribution and contributing to the community's overall development.

2.3. Relationship Between Capital Structure and Profitability in Islamic Banking

Empirical studies examining the relationship between capital structure and profitability have yielded mixed results. They show both positive and negative correlations and vary significantly across institutions and countries.

The study of Islamic banking and financial institutions is influenced by both conventional economics and Shariah principles. Ahmad's pioneering work in 1992 highlights several distinctions between Islamic and conventional banks (Musa et al., 2020). Firstly, Islamic banks operate on a risk-sharing model, unlike the interest-based debt contracts of conventional banks, meaning depositors in Islamic banks are investors sharing in both profits and losses, which influences the behavior of these banks. Secondly, Islamic banks do not

charge or receive predetermined rates of return, leading to different financing modes and the implementation of monetary policy. Thirdly, new forms of deposit and credit instruments must be developed to assess their impact on liquidity preferences and economic activity. Additionally, substantial differences exist among Islamic banks based on their operating countries' socioeconomic and political contexts. Finally, there is no unanimous agreement among Islamic economists and fiqh scholars on the permissibility and implementation of various financial intermediation modes, which continues to evolve. These factors justify treating Islamic banking as a unique subsector of the finance industry and necessitate specialized research and methodologies tailored to Islamic banking.

The relationship between capital structure and profitability is influenced by firm-specific and macroeconomic factors, which can vary across countries and economic conditions (Ngoc et al., 2021). Firm-specific determinants of capital structure may also be influenced by the same forces that determine profitability, making them endogenous to the profit-capital structure relationship. This endogeneity complicates efforts to identify the impact of capital structure on the profitability of Islamic banks using cross-sectional data, as the direction of causality remains unclear.

Chapter Three: Literature Review

3.1. Introduction

3.2. Previous Studies

3.3. Summary of Previous Studies

3.4. Research Gaps

3.5. Conclusion

3.1. Introduction

The relationship between capital structure and profitability is a vital area of research in financial management, especially in Islamic banking. Islamic banks adhere to unique principles and financial structures that set them apart from conventional banks, necessitating a thorough understanding of how these differences affect financial outcomes. This chapter offers a detailed review of the existing literature on how capital structure impacts the profitability of Islamic banks. It integrates findings from various studies, identifies trends and patterns, and identifies the gaps this research aims to address. By exploring diverse contexts and methodologies, this chapter lays the groundwork for a comprehensive analysis of the role capital structure plays in shaping the financial performance of Islamic banks.

3.2. Previous Studies

1- (Ade Salman Al-Farisi & Riko Hendrawan, 2011). "Effect of Capital Structure on Banks Performance: A Profit Efficiency Approach"

This paper investigated the impact of capital structure on the performance of Islamic and conventional banks in Indonesia. The study employed a two-stage procedure. First, it measured the profit efficiency of Indonesian banks between 2002 and 2008 using a Distribution Free Approach (DFA). Second, it examined the effect of capital ratio (total equity/total assets) on profit efficiency using pooled least squares regression. Indonesian banks' average profit efficiency score was 0.60, indicating room for improvement. Notably, Islamic banks were among the top 20% in profit efficiency. The study found a negative relationship between capital ratio and profit efficiency for Islamic and conventional banks. This suggests that higher capital ratios can lead to lower Profitability. Interestingly, the negative effect was more pronounced for Islamic banks.

2- (Mohammad Khodaei Valahzaghard & Ali Taherinejhad, 2012). "The Impact of Working Capital and Financial Structure on Profitability of Islamic Banking Industry"

This paper investigated the factors influencing the Profitability of Iranian Islamic banks, explicitly focusing on working capital, financial structure (degree of financial leverage), bank size, and liquidity. The study used data from 19 active Iranian banks between 2005 and 2010. They employed regression analysis with return on assets (ROA) as the dependent variable, and the factors mentioned earlier as independent variables. The analysis also considers the impact of ownership type (private, governmental, or combined). Statistical tests like Chow and Hausman tests are used to determine the appropriate regression model, and

diagnostic tests ensure the validity of the results. The study revealed a negative relationship between the degree of financial leverage (DFL) and Profitability (ROA). This suggests that as Iranian Islamic banks increase their reliance on debt financing, their Profitability tends to decline; this finding could be attributed to several factors. High leverage can increase financial risk and interest expenses, impacting the bank's overall Profitability. Additionally, it might restrict the bank's flexibility in pursuing profitable investment opportunities, and similar to DFL, a negative relationship was observed between working capital and Profitability. Efficient working capital management appears crucial for Iranian Islamic banks to maintain Profitability.

3- (Abdelrhman Ahmad Meero, 2015). "The Relationship between Capital Structure and Performance in Gulf Countries Banks: A Comparative Study between Islamic Banks and Conventional Banks"

This paper primarily aimed to achieve two goals: firstly, to ascertain the parallels in capital structure between Islamic and Conventional banks; secondly, to uncover the correlation between capital structure variables and the performance of banks, both Islamic and Conventional, in Gulf Countries (GC). The study used a sample of 16 GCC banks (8 Islamic and eight conventional) from 2005-2014. Data analysis involved T-tests to assess the similarity of capital structure between Islamic and conventional banks and correlation analysis to investigate the relationship between capital structure and performance. Performance measures: Return on Equity (ROE) and Return on Assets (ROA) and Capital structure measures: Total debt to total assets, Equity to total assets, Debt to equity ratios, and Bank size. The study found no statistically significant difference between the capital structures of Islamic and conventional banks in the GCC. This suggests that both banks operate under similar regulatory environments and financial constraints. This study found a significant negative relationship between ROA and leverage ratios (debt-to-assets and debt-to-equity) for Islamic and conventional banks, suggesting that profitable banks prefer internal financing and use less debt. Conversely, ROA was positively related to the equity-to-assets ratio and bank size, implying that banks with more vital equity positions and larger asset bases tend to be more profitable. The relationship between ROE and capital structure variables was less conclusive. However, a positive and significant relationship was observed between ROE and bank size for Islamic and conventional banks, indicating that larger banks tend to generate higher returns for their shareholders.

4- (Ejaz Aslam & Farrukh Ijaz & Anam Iqbal, 2016). "Does Working Capital and Financial Structure Impact Profitability of Islamic and Conventional Banks Differently?"

This study examined the impact of working capital and financial structure on Pakistan's banking sector profitability. The study utilized a balanced panel dataset of 5 Islamic

banks (2006-2014) and 15 conventional banks (2008-2014) in Pakistan. They employed Generalized Least Squares (GLS) regression analysis to investigate the impact of working capital and financial structure on Profitability, measured by Return on Assets (ROA), Return on Equity (ROE), and Net Income (NI). This study found a statistically significant positive relationship between financial leverage (debt-to-equity ratio) and the Profitability of Islamic banks. This suggests that higher debt levels are associated with increased Profitability in Islamic banks, contrary to the findings for conventional banks.

5- (Muhammad AsadUllah & Arsalan Khanzada & Dr. ImamUddin, 2018). "Capital Structure and Islamic Banks' Performance"

The research examined the impact of capital structure on the Profitability of Islamic banks in Pakistan. The study utilizes ten years of annual data (2004-2015) from five full-fledged Islamic banks operating in Pakistan. Panel regression analysis with fixed and random effects models is applied to investigate the relationships between the variables. The Hausman test is used to determine the appropriate model. Dependent variables, Return on Assets (ROA) and Return on Equity (ROE), are used to measure Profitability. Independent variables: Leverage ratio, bank size, capital adequacy ratio, total debt to total assets ratio, total debt to capital ratio, and asset growth are employed to assess the impact of capital structure. This study found that the leverage ratio has an insignificant impact on both ROA and ROE, suggesting that debt financing does not play a crucial role in the Profitability of Islamic banks, possibly due to their reliance on interest-free financing and investment tools, the total debt to total assets ratio has a significant negative impact on ROE but not on ROA and the total debt-to-capital ratio has a significant negative impact on ROA, suggesting a higher reliance on debt financing compared to equity, potentially increasing risk for investors.

6- (Ahmad Al-Harby, 2019). "Factors Affecting Capital Structure of Conventional and Islamic Banks: Evidence from MENA Region"

This study aimed to investigate and compare the factors affecting conventional and Islamic banks' capital structure choices and their financial characteristics; it used data from 139 conventional banks and 79 Islamic banks in the MENA region from 1989 to 2008. The analysis employs a dynamic panel data model (two-way fixed effect) with the Arellano and Bover (1995) GMM method to investigate the determinants of capital structure for both types of banks. Additionally, t-tests are used to compare the financial characteristics of conventional and Islamic banks. The study's findings indirectly suggest a link between capital structure and Profitability. The negative correlation between Profitability and leverage implies that banks relying more on internal financing (lower leverage) tend to be more profitable.

7- (Noor ul Qayyum & Umara Noreen, 2019). "Impact of Capital Structure on Profitability: A Comparative Study of Islamic and Conventional Banks of Pakistan"

The research investigated the relationship between capital structure and Profitability in the context of Islamic and conventional banks operating in Pakistan. The study employed a comparative analysis using data from ten Pakistani banks (five Islamic and five conventional) from 2006-2016. Independent samples T-test was used to compare the capital structure of both banks. At the same time, fixed-effects regression analysis was employed to assess the impact of capital structure on Profitability, measured by Return on Assets (ROA), Return on Equity (ROE), and Earnings per Share (EPS). The research revealed that the capital structure of Islamic banks in Pakistan is mainly similar to that of conventional banks, except for bank size, where a significant difference was observed. This suggests that both banks operate under similar regulatory environments and face comparable financial constraints. Like conventional banks, the study found a negative correlation between capital structure and ROA for Islamic banks. This implies that a higher reliance on debt financing can lead to lower Profitability in asset utilization. In contrast to ROA, ROE exhibited a positive correlation with capital structure for Islamic banks. This suggests that despite the potential negative impact on asset utilization, the use of debt financing can magnify returns for shareholders. Moreover, the study revealed a mixed relationship between capital structure and EPS for Islamic banks, with some variables showing a positive correlation and others exhibiting a negative correlation. This suggests a more complex interplay between financing decisions and Profitability at the shareholder level.

8- (Fenty Fauziah & Azhar Latief & Sri Wahyuni Jamal, 2020). "The Determinants of Islamic Banking Capital Structure in Indonesia"

This study aimed to analyze and explain the factors that influence the capital structure of Islamic banking in Indonesia, and this quantitative study used panel data from financial reports of five Islamic banks in Indonesia between 2010 and 2018. The authors employed data panel regression analysis to examine the influence of Profitability (ROA and NPM), risk (FDR), and firm size on capital structure, as measured by the debt-to-equity ratio (DER). Where the study found that Profitability, specifically Return on Assets (ROA), positively and significantly impacts the capital structure of Islamic banks in Indonesia, the study indirectly touched on the impact of capital structure on Profitability. The positive relationship between ROA and DER suggests that a higher reliance on debt financing might improve Profitability. Moreover, firm size positively and significantly affects the capital structure, indicating that larger Islamic banks require more debt and careful capital management. Net Profit Margin (NPM) and financial-to-deposit ratio (FDR) do not significantly influence the capital structure of Islamic banks in Indonesia. The findings suggest that Islamic bank managers in Indonesia

prefer internal funds for their capital structure over debt or equity financing. This preference may be due to constraints imposed by Islamic law, which encourages higher capital buffers.

9- (Mudassir Zaman & Shakir Ullah & Arshad Ali, 2020). "Relationship between Capital Structure and Profitability: Dual Banking Perspective"

This paper investigated the relationship between capital structure and Profitability within the context of Islamic and conventional banks listed on the Karachi Stock Exchange. The study utilized regression analysis to examine the relationship between the Debt-to-Equity (DER) ratio and profitability measures such as Return on Equity (ROE) and Return on Assets (ROA). The analysis considers data from 20 conventional and 5 Islamic banks between 2006 and 2016. This study found no significant relationship between Islamic banks' DER ratio and profitability. This can be attributed to the unique deposit structure of Islamic banks, where most deposits (excluding current accounts) are treated as equity rather than liabilities.

10- (Ahmad Roziq & Ayang Marizca & Alwan Sri Kustono, 2021). "Testing the Efficiency of Capital Structure and Assets Structure in Bank"

Through analysis of capital and asset structures, this study aims to assess their influence on the financial risk and Profitability experienced by Islamic banks operating in Indonesia. The study employed an explanatory research design with a quantitative approach. Secondary data from 2014-2018 was collected from Islamic banks on the Indonesia Stock Exchange. Path analysis was utilized to examine the causal relationships between variables. Interestingly, the research found no significant impact of capital structure on Profitability. The authors suggest this difference arises because Islamic banks primarily utilize profit-sharing systems (Musharakah and Mudarabah) rather than interest-based debt.

11- (Zemenu Amare Ayalew, 2021). "Capital structure and profitability: Panel data evidence of private banks in Ethiopia."

This study delved into the connection between a private bank's capital structure, specifically its total and short-term debt ratios, and its Profitability within the Ethiopian banking landscape. The study employed a panel data analysis with a fixed effects model using data from 16 private banks in Ethiopia spanning from 2013 to 2018. The analysis focused on the impact of total and short-term debt ratios on profitability measures such as Return on Assets (ROA) and Net Interest Margin per Asset (NIMA). Control variables were also included: bank size, age, loan-to-deposit ratio, cost-to-income ratio, credit risk, and employee productivity. Both total and short-term debt ratios were found to have a significant positive impact on bank profitability. This suggests that Ethiopian private banks relying more on debt financing, especially short-term debt (saving and demand deposits), tend to be more profitable.

12- (Dadan Rahadian & Zahara Fitri Ramandhini, 2021). "Capital Structure and Its Implication on Profitability: An Empirical Study from Sharia Banks in Indonesia"

This study examined the relationship between capital structure and Profitability within Sharia banks in Indonesia. The researchers employed a quantitative approach, utilizing data from 12 Sharia banks in Indonesia over five years. They measured capital structure using the Debt-to-Equity Ratio (DER) and Debt-to-Asset Ratio (DAR). At the same time, Profitability was assessed through Return-on-Equity (ROE) and Return-on-Asset (ROA). Multiple linear regression analysis was conducted to test the hypotheses regarding the influence of capital structure on Profitability. This study found that the analysis revealed no statistically significant influence of DER and DAR on ROA and ROE within Indonesian Sharia banks. Despite the lack of statistical significance, the study identified a negative correlation between debt and Profitability. This implies that as the use of debt increases, Profitability tends to decrease. The findings suggest that Sharia banks should carefully manage their debt levels to optimize Profitability. High debt levels can negatively impact net income due to increased interest payments, potentially reducing ROA and ROE if asset and equity growth do not compensate.

13- (Rifqi Muhammad & Risca Azmiana, 2021). "Determinan Struktur Modal Perbankan Syariah Asia dan Eropa" (Determinants of Capital Structure of Islamic Banks in Asia and Europe)

This study examined the factors that can potentially influence the capital structure of the Islamic banking industry. The study employed a purposive sampling technique, analyzing 24 Islamic banks in Asia and Europe from 2011 to 2018. Panel data analysis and statistical applications were used to assess the impact of various factors on the capital structure of these banks. Profitability has a positive effect on capital structure. This indicates that as Islamic banks become more profitable, they tend to have a higher proportion of debt in their capital structure. This could be attributed to increased investor confidence and access to external funding. While the study does not directly investigate the impact of capital structure on Islamic banks' Profitability, the findings suggest some potential implications. The positive relationship between Profitability and capital structure could imply that a higher proportion of debt may lead to increased Profitability, potentially due to the tax shield benefits of debt financing and the efficient use of financial leverage. However, considering the associated risks of higher debt levels, such as financial distress and agency problems, is crucial.

14- (Larabi Moustapha & Roucham Benziane, 2022). "The Impact of Capital Structure on Islamic Banks Profitability: Evidence from GCC Countries"

This paper investigated the relationship between capital structure and Profitability within Islamic banks operating in the Gulf Cooperation Council (GCC) countries. The study

used panel data from 5 Islamic banks across Saudi Arabia, UAE, Qatar, Bahrain, and Kuwait from 2010 to 2020. Capital structure is measured using two ratios: Deposit to Total Assets (DTA) and Equity to Total Assets (ETA). Profitability is assessed through three measures: Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The analysis employed E-Views 10 software, utilizing correlation analysis, unit root tests, and panel regression with fixed and random effects models. The Hausman test is used to determine the most appropriate model. The study found a positive and significant relationship between the Equity to Total Assets (ETA) ratio and Return on Assets (ROA). This suggests that a higher proportion of equity financing contributes to improved Profitability in asset utilization. The Deposit to Total Assets (DTA) ratio shows no significant relationship with ROA or NPM, indicating that the proportion of deposits in the capital structure does not significantly impact these profitability measures. Moreover, there is no significant relationship between either ETA or DTA ratios and ROE. A strong positive and significant relationship is observed between the ETA ratio and net profit margin (NPM). This implies that a higher equity ratio leads to more revenue translating into profit. Overall, the study suggests that capital structure, specifically the equity ratio, plays a crucial role in influencing the Profitability of Islamic banks in the GCC region.

15- (Titis Miranti & Ulfi Kartika Oktaviana, 2022). "Effect of Capital Structure on Financial Sustainability of Sharia Public Financing Bank (BPRS)"

This study examined the impact of capital structure on the financial sustainability of Islamic People's Financing Banks (BPRS) in Indonesia, focusing on Profitability as a mediating factor. The research employed a quantitative approach using logistic regression analysis. The data is sourced from the financial reports of BPRS listed on the OJK website and covers the period from 2018 to 2020. The study defined financial sustainability using the Financial Self-Sufficiency (FSS) ratio and categorized BPRS as either sustainable (FSS ≥ 100%) or unsustainable (FSS < 100%). Capital structure is evaluated using four ratios: Equity Ratio (ER), Equity Multiplier (EM), Debt Ratio (DR), and Debt-to-Equity Ratio (DER). Profitability is measured using the Return on Assets (ROA) ratio. It was found that the capital structure had a significant direct and positive effect on the financial sustainability of BPRS. Specifically, higher ER, EM, and DR values are associated with an increased likelihood of achieving financial sustainability. Conversely, higher DER values indicate a lower chance of sustainability. Profitability (ROA) acts as a significant mediator in the relationship between capital structure and financial sustainability. Higher Profitability enhances the positive effect of capital structure on sustainability. The study found that the relationship between capital structure and Profitability in BPRS is nuanced and differs from conventional findings. While

previous research suggests leverage increases Profitability, this study found that BPRS with lower debt portions still experience improved Profitability due to effective capital management.

16- Anwar Zahid & Chinmoy Das Gupta & Retnoningrum Hidayah & Ishaq Shariar, 2022). "Impacts of Capital Structure on Performance of Islamic and Conventional Banks: Evidence from Bangladesh"

The research paper investigated the relationship between capital structure and performance, specifically focusing on Islamic and conventional banks in Bangladesh. It used panel data from 24 Bangladeshi banks (6 Islamic and 18 conventional) spanning 2010 to 2017. EViews software was used for data analysis, employing T-tests and Ordinary Least Squares (OLS) regression to examine the connections between capital structure variables (total debt ratio, short-term debt ratio, long-term debt ratio) and performance measures (return on assets - ROA and return on equity - ROE), while controlling for factors like liquidity, size, GDP growth, and inflation. Unlike conventional banks, no significant impact of capital structure (TDTA, SDTA, LDTA) on Islamic banks' Profitability was observed. However, the study found that the loan-to-asset ratio (LTA) had a positive and significant relationship with ROA and ROE in Islamic banks, meaning a higher LTA leads to better performance.

17- (Sonia Ainun Masruroh & Guntur Kusuma Wardana, 2022). "The Influence of Asset Growth, Profitability, and Firm Size on the Capital Structure of Islamic Banking in the World Period 2011-2020"

This study investigated how asset growth, Profitability, and firm size impact the capital structure decisions of Islamic banks globally. The researchers employed a quantitative approach with an explanatory design. Using purposive sampling, they analyzed data from 18 Islamic banks chosen from the 187 Islamic Financial Services Board (IFSB) members. Financial reports from 2011 to 2020 formed the basis of the analysis, with panel data regression conducted using EViews10 software. This study found that increased Profitability hurts capital structure. Highly profitable Islamic banks use retained earnings to finance operations, reducing their dependence on external debt. While the study doesn't directly address the impact of capital structure on Profitability, the findings suggest potential implications. A higher reliance on debt (higher capital structure) can increase financial risk and interest expenses, potentially affecting Profitability. On the other hand, a balanced capital structure that optimizes the use of debt and equity can provide financial flexibility and support growth, potentially leading to increased Profitability in the long run.

18- (Guntur Kusuma Wardana & Noer Aisyah Barlian, 2022). "Determinant of Islamic Banks on the World Capital Structure"

This paper investigated the factors influencing the capital structure of Islamic banks globally and their impact on Profitability. The study employed a quantitative approach using panel data from 18 central Islamic banks worldwide between 2011 and 2020. The analysis involved descriptive statistics, panel data regression models (specifically the Fixed Effect Model), and hypothesis testing using t-tests and F-tests to determine the significance of various factors. This study found that Return on Assets (ROA), a profitability indicator, significantly negatively affected capital structure. Return on Equity (ROE) and Price-Earnings Ratio (PER) did not significantly impact capital structure statistically. While the study primarily focused on factors influencing capital structure, the findings indirectly suggest potential impacts on Profitability: Higher leverage (DER) resulting from larger bank size or asset growth could lead to increased financial risk and potentially lower Profitability if not managed effectively and higher ROA implies efficient asset utilization and Profitability, but relying solely on internal funds for growth might limit expansion opportunities.

19- (M Sandi Marta & Ahmad Gunawan & Syti Sarah Maesaroh & Nugraha & Syaiful Bahri, 2022). "Interactive Effect of Capital Structure on Profitability and Earning Per Share of Sharia Bank"

This paper aimed to examine the impact of capital structure on Islamic banks' profitability and earnings per share (EPS) in Indonesia. Financial data from 4 Islamic banks listed on the Indonesia Stock Exchange from 2016 to 2020 was used. To determine the relationship and interaction of each variable, the researchers utilized Moderated Regression Analysis (MRA) on the collected data. This statistical technique was applied to understand the interaction between independent and dependent variables, explicitly focusing on the moderating role of the debt-to-equity ratio (DER). The research emphasizes the importance of a balanced capital structure for Islamic banks. While some debt can be beneficial, high debt levels can hinder Profitability and reduce earnings per share. This finding aligns with the principles of Islamic finance, which discourage excessive debt and promote responsible financial practices.

20- (Addys Aldizar & Vepy Agustina, 2022). "Analysis of the Influence of Asset Quality, Liquidity, and Capital on Profitability"

The research focused on the financial performance of Islamic Commercial Banks (ICBs) in Indonesia, specifically examining the impact of asset quality, liquidity, and capital on Profitability. The study employed a quantitative approach using secondary data from the annual reports of 6 ICBs in Indonesia from 2015 to 2019. Purposive sampling was used for sample selection. The researchers employed multiple linear regression analysis to assess the relationships between the independent variables (asset quality measured by Non-Performing

Financing (NPF), liquidity measured by Financing to Deposit Ratio (FDR), and capital measured by Capital Adequacy Ratio (CAR)) and the dependent variable (Profitability measured by Return on Assets (ROA)). The study found no significant positive effect of capital on Profitability in ICBs. This suggests that while ensuring the bank's ability to cover potential losses, a high CAR may also hinder Profitability as capital reserves become tied up and unavailable for financing activities.

3.3. Summary of previous studies

Author(s) & Year	Objectives & Period	Estimation Method	Main Results
Ade Salman Al-Farisi & Riko Hendrawan, 2011	Impact of capital structure on the performance of Indonesian banks (2002-2008)	Panel Data	Negative relationship between capital ratio and profit efficiency, more pronounced for Islamic banks. Higher capital ratios lead to lower profitability
Mohammad Khodaei Valahzaghard & Ali Taherinejhad, 2012	Explored factors influencing profitability of Iranian Islamic banks, 2005-2010	Panel Data	Negative relationship between financial leverage and profitability. Efficient working capital management was crucial for profitability
Abdelrhman Ahmad Meero, 2015	Compared capital structure and its impact on the performance of Islamic and Conventional banks in Gulf Countries, 2005-2014	T-tests and correlation analysis	No significant difference in capital structures between Islamic and Conventional banks. Negative relationship between leverage ratios and ROA. A positive relationship between equity-to-assets ratio, ROA and bank size. Positive relationship between bank size and ROE.
Ejaz Aslam & Farrukh Ijaz & Anam Iqbal, 2016	Examined impact of working capital and financial structure on Pakistani banks' profitability,(Islamic: 2006-2014, Conventional: 2008-2014)	GLS regression analysis	A positive relationship between leverage and profitability for Islamic banks, contrary to conventional banks.
Muhammad Asadullah & Arsalan Khanzada & Dr ImamUddin, 2018	Investigated impact of capital structure on profitability of Pakistani Islamic banks, 2004-2015	Panel Data	Insignificant impact of leverage ratio on profitability. Significant negative impact of total debt to total assets ratio on ROE. Significant negative impact of total debt-to-capital ratio on ROA

Ahmad Al-Harby, 2019	Explored factors affecting capital structure choices of Conventional and Islamic banks in MENA region, 1989-2008	Panel Data	Negative correlation between profitability and leverage, indicating banks relying more on internal financing tend to be more profitable
Noor ul Qayyum & Umara Noreen, 2019	Investigated impact of capital structure on profitability of Pakistani banks, 2006-2016	Panel Data	Negative correlation between capital structure and ROA for Islamic banks. Positive correlation between capital structure and ROE. Mixed relationship with EPS.
Fenty Fauziah & Azhar Latief & Sri Wahyuni Jamal, 2020	Analyzed determinants of Islamic banking capital structure in Indonesia, 2010-2018	Panel Data	Positive and significant impact of ROA and firm size on capital structure. Net Profit Margin and financial-to-deposit ratio do not significantly influence capital structure
Mudassir Zaman & Shakir Ullah & Arshad Ali, 2020	Explored relationship between capital structure and profitability in dual banking system, 2006-2016	Panel Data	No significant relationship found between capital structure (DER) and profitability for Islamic banks due to unique deposit structure.
Ahmad Roziq & Ayang Marizca & Alwan Sri Kustono, 2021	Examined efficiency of capital and asset structures in Indonesian Islamic banks, 2014-2018	Panel Data	No significant impact of capital structure on profitability due to profit-sharing systems rather than interest-based debt
Zemenu Amare Ayalew, 2021	Investigated capital structure and profitability of private banks in Ethiopia, 2013-2018	Panel Data	Significant positive impact of total debt ratio and short-term debt ratio on profitability.
Dadan Rahadian & Zahara Fitri Ramandhini, 2021	Explored capital structure's implication on profitability in Sharia banks in Indonesia, 5 years	Panel Data	No statistically significant influence of debt-to-equity ratio on profitability, negative correlation between debt and profitability
Rifqi Muhammad & Risca Azmiana, 2021	Examined determinants of capital structure of Islamic banks in Asia and Europe, 2011-2018	Panel Data	Profitability positively affects capital structure, suggesting increased profitability leads to higher debt proportions

Larabi Moustapha & Roucham Benziane, 2022	Investigated impact of capital structure on Islamic banks' profitability in GCC countries, 2010-2020	Panel Data	Positive relationship between Equity to Total Assets ratio and Return on Assets. No significant relationship between Deposit to Total Assets ratio and profitability. Strong positive relationship between Equity to Total Assets ratio and Net Profit Margin.
Titis Miranti & Ulfi Kartika Oktaviana, 2022	Examined effect of capital structure on financial sustainability of Sharia People's Financing Banks in Indonesia, 2018-2020	Panel Data	Capital structure had significant direct and positive effect on financial sustainability, with profitability acting as a mediator.
Anwar Zahid & Chinmoy Das Gupta & Retnoningrum Hidayah & Ishaq Shariar, 2022	Investigated impacts of capital structure on performance of Islamic and Conventional banks in Bangladesh, 2010-2017	Panel Data	No significant impact of capital structure on Islamic banks' profitability. Positive and significant relationship between loan-to-asset ratio and both ROA and ROE.
Sonia Ainun Masruroh & Guntur Kusuma Wardana, 2022	Examined influence of asset growth, profitability, and firm size on capital structure of Islamic banks globally, 2011-2020	Panel Data	Increased profitability negatively affects capital structure, suggesting highly profitable banks use retained earnings, reducing dependence on external debt.
Guntur Kusuma Wardana & Noer Aisyah Barlian, 2022	Factors influencing the capital structure of Islamic banks globally and their impact on profitability, 2011-2020	Panel Data	ROA negatively affects capital structure, indicating high leverage may hinder profitability. ROE and PER do not significantly impact capital structure
M Sandi Marta & Ahmad Gunawan & Syti Sarah Maesaroh & Nugraha & Syaiful Bahri, 2022	Examined interactive effect of capital structure on profitability and EPS of Sharia banks in Indonesia	Moderated Regression Analysis (MRA)	Balanced capital structure important for profitability; high debt levels can hinder profitability and reduce EPS.
Addys Aldizar & Vepy Agustina, 2022	Analyze impact of asset quality, liquidity, and capital on Indonesian Islamic banks' profitability, 2015-2019	Panel Data	No significant positive effect of capital on profitability.

3.4. Research Gaps

Although previous research has investigated the link between capital structure and profitability in Islamic banks, notable gaps persist. Much of the existing literature has concentrated on specific regions or limited timeframes, restricting the broader applicability of the findings. Furthermore, the effects of recent financial innovations and regulatory shifts on the capital structures of Islamic banks have not been thoroughly examined. Additionally, many studies fail to consider the influence of global economic fluctuations over long periods. This research seeks to fill these gaps by analyzing data from leading Islamic finance countries spanning nearly two decades, offering a more comprehensive insight into how capital structure impacts the profitability of Islamic banks.

3.5. Conclusion

The literature review highlights Islamic banks' intricate and multifaceted relationship between capital structure and profitability. The findings suggest that equity and deposits significantly influence profitability, although their effects vary depending on the context and period. Consistently, research shows that well-capitalized banks generally perform better, but the reliance on deposits and other funding sources also plays a crucial role in profitability. This review emphasizes the need for further studies that cover more extended time frames and broader geographical areas. By addressing these gaps, this study aims to offer deeper insights into how capital structure decisions impact the financial health of Islamic banks, thereby contributing to more informed financial strategies and policies within the Islamic banking sector.

Chapter Four: Data and Methodology

4.1. Introduction

4.2. Data of the Study

4.2.1. Source of Data
4.2.2. Population and Sample
4.2.3. Variables of the Study

4.3. The Methodology of the Study

4.4. Conclusion

4.1. Introduction

This chapter outlines the research methodology employed to investigate the impact of capital structure on the profitability of Islamic banks. It details the data sources, population and sample selection, variables used, and the econometric model chosen for analysis. The study focuses on the top five Islamic finance countries based on the Islamic Financial Services Board (IFSB) rankings, specifically Indonesia, Malaysia, Saudi Arabia, UAE, and Qatar, for 2003-2022.

4.2. Data of the Study

This section outlines the key components of the research: the sources of the data, the population being studied, the sample selected for analysis, and the variables being investigated.

4.2.1 Source of Data

This research relies on various data sources, primarily focusing on secondary data published by international institutions. Specifically, the study draws upon statistical databases from The Islamic Financial Services Board (IFSB), The Islamic Development Bank (IsDB), and The Cambridge Global Islamic Finance Report (Cambridge GIFR).

The study data is extracted from the audited annual statements of Islamic Banks from 2003 to 2022. The study variables were collected from the yearly financial reports of the study sample banks.

4.2.2 Population and Sample

This study's population encompasses five Islamic banks operating within the top ten Islamic finance countries, ranked by the Islamic Financial Services Board (IFSB). This represents a comprehensive set of institutions contributing significantly to the global Islamic finance landscape.

However, analyzing this entire population would be resource-intensive and potentially unwieldy. Therefore, the study focuses on a specific sample: Islamic banks from five countries – Indonesia, Malaysia, Saudi Arabia, UAE, and Qatar. These nations are strategically chosen from the top ten rankings, representing diverse stages of Islamic finance development and varying regulatory environments. This targeted sampling provides a manageable yet

representative subset for in-depth analysis, aiming to draw insightful conclusions about the impact of capital structure on Islamic banks' profitability.

Table 4-1: The Sample of the Study

N	Country's Name	Bank's Name
1	Indonesia	Bank Syariah Indonesia
2	Malaysia	Maybank Islamic Berhad
3	Kingdom of Saudi Arabia	Al Rajhi Bank
4	United Arab Emirates	Dubai Islamic Bank
5	Qatar	Qatar Islamic Bank

Source: Elaborated by Researcher

4.2.3 Variables of the Study

The purpose of this study is to examine the impact of capital structure in achieving profitability, surveying Islamic banks for the top Islamic finance countries (Indonesia, Malaysia, Saudi Arabia, UAE, and Qatar) with emphasis on the case of Banks: Syariah Indonesia, Maybank Islamic Berhad, Al Rajhi Bank, Dubai Islamic Bank, and Qatar Islamic Bank for the period 2003-2022. To achieve this objective, the study attempts to identify the factors that are significantly influencing the profitability measured by Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM).

a. The Dependent Variable

Profitability is measured by:

Return on Assets (ROA): Calculated as net income divided by total assets.

Return on Equity (ROE): Calculated as net income divided by total equity.

Net Profit Margin (NPM): Calculated as net income divided by total revenue.

b. The Independent Variables

Capital Structure measured by:

Deposits to Total Assets Ratio (DTA): Calculated as total deposits divided by total assets.

Equity to Total Assets Ratio (ETA): Calculated as total equity divided by total assets.

4.3. The Methodology of the Study

The main goal of this research is to analyze the impact of capital structure on the profitability of Islamic banks. A panel data regression model is utilized to fulfill this aim.

Random and fixed effect techniques generally predestine panel data analysis.

This approach is suitable for analyzing data across multiple countries and periods. The model will take the following form:

$$Yit = \beta 0 + \beta 1Dit + \varepsilon it$$

Where Y = dependent variable (Profitability)

β0: Represents the intercept term.

β1 and β2: Represent the coefficients of the independent variables.

ε: Represents the error term.

I: signifies the cross-sectional element of the study.

t: represents the time series element in this study.

Equation 1: Return on assets

$$ROAit = \beta 0it + \beta 1\ DTAit + \beta 2\ ETAit + \varepsilon it$$

Equation 2: Return on Equity

$$ROEit = \beta 0it + \beta 1\ DTAit + \beta 2\ ETAit + \varepsilon it$$

Equation 3: Net Profit Margin

$$NPMit = \beta 0it + \beta 1\ DTAit + \beta 2\ ETAit + \varepsilon it$$

4.4. Conclusion

This chapter has presented the methodology employed in investigating the impact of capital structure on the profitability of Islamic banks in Indonesia, Malaysia, Saudi Arabia, UAE, and Qatar. The study utilizes a panel data regression model to analyze data from a sample of the largest Islamic banks in each country from 2003 to 2022. The findings of this study are expected to provide valuable insights into the relationship between capital structure and profitability in the context of Islamic banking, which can benefit policymakers, regulators, and Islamic bank managers.

Chapter Five: Data Analysis

5.1. Introduction

5.2. Statistical Analysis

5.2.1. Descriptive Statistics
5.2.2. Multicollinearity Test
5.2.3. Heteroskedasticity Test
5.2.4. Correlation Matrix Between the Explanatory Variables

5.3. Empirical Results

5.3.1. Pooled Ordinary Least Squares (Pooled OLS) Model
5.3.2. Fixed Effects Model (FEM)
5.3.3. Random Effects Model (REM)
5.3.4. Breusch-Pagan Lagrange Multiplier (LM) Test
5.3.5. Hausman Test
5.3.6. White's Robust Standard Errors

5.4. Conclusion

5.1. Introduction

Data analysis is a pivotal stage in research, linking theoretical concepts with practical outcomes. This chapter focuses on the statistical analysis of how capital structure affects the profitability of Islamic banks. It aims to explore the relationships between key financial indicators, such as ROA, ROE, and NPM, and capital structure components, such as ETA and DTA. We build a solid empirical basis by employing various statistical tests and models, including Descriptive Statistics, Multicollinearity Tests, Heteroskedasticity Tests, and correlation analysis. The chapter then uses Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM), along with the Breusch-Pagan Lagrange Multiplier (LM) Test and Hausman Test, to determine the best model for our data. This detailed analysis aims to reveal the complex impact of capital structure choices on the financial performance of Islamic banks.

5.2. Statistical Analysis

Statistical analysis, a systematic approach to data, is a vital part of research. It involves a step-by-step process of collecting, organising, analysing, and interpreting data to uncover meaningful insights and draw reliable conclusions.

This section begins with an overview of descriptive statistics and then assesses the presence of multicollinearity among independent variables. Finally, it presents the study's critical empirical results.

5.2.1 Descriptive Statistics

The descriptive statistics are presented for five countries from the top Islamic finance countries from 2003 to 2022. The data consists of 86 country-year observations during the period mentioned earlier for each variable. **Table (5-1),** which follows, reports the most important descriptive statistics for the sample of countries included in this study. This section provides descriptive statistics, focusing on the mean, median, standard deviation, minimum, maximum, and total number of observations.

Table 5-1: Descriptive Statistics of the Variables of the Study

Variables	Mean	Median	Max	Min	Std.Dev	N
ROA	0.019346	0.0158540	0.0870867	0.0001574	0.0156189	86
ROE	0.1443558	0.1346557	0.4420403	0.0013339	0.0812989	86
NPM	0.3483284	0.3591506	0.9829063	0.0020110	0.2253912	86
ETA	0.1266366	0.1312558	0.2857597	0.0745525	0.0404669	86
DTA	0.5781559	0.7412195	0.8869833	0.0202188	0.2692330	86

Source: Prepared by the researcher using **Stata 17** software

The result presented in **Table (5-1)** demonstrates that while the average ROA is relatively low (0.019346), indicating a modest return on investments, the data suggests a moderate spread in performance levels. Half of the companies generate a lower return than the median of 0.0158540, while a few stand out with a substantially higher return, reaching a maximum of 0.0870867. ROE is considerably higher (0.1443558), indicating that companies are, on average, generating better returns on their equity investments than their overall assets. Like ROA, a moderate degree of variation exists, with half of the companies falling below the median of 0.1346557. However, a significant maximum value of 0.4420403 highlights the potential for exceptional performance in this area.

NPM (0.3483284) signifies that companies effectively convert a substantial portion of their revenue into profit. While the median of 0.3591506 suggests similar performance for half the companies, the high standard deviation (0.2253912) indicates a wide range in profitability levels, with some companies achieving a remarkably high NPM of 0.9829063.

ETA (0.1266366) indicates that equity contributes moderately to financing assets. This ratio demonstrates moderate variability, with half of the companies having a lower equity-to-asset ratio than the median of 0.1312558. However, a maximum value of 0.2857597 suggests that some companies rely heavily on equity financing.

DTA (0.5781559) reveals a significant dependence on deposits to fund assets. This ratio exhibits the highest degree of variability, with half the companies having a lower deposits-to-asset ratio than the median of 0.7412195. This wide range is further emphasized by the high maximum value of 0.8869833, suggesting a diverse approach to asset financing among the companies.

5.2.2 Multicollinearity Test

Multicollinearity arises when independent variables in a regression model are firmly related, making it difficult to determine the unique effect of each variable on the outcome. This interdependence between predictors can lead to unstable and unreliable estimates of the relationships, making the model's interpretation challenging and potentially misleading (Shrestha, 2020).

Table 5-2: Variance Inflation Factor (VIF)

Variables	VIF	1/VIF
DTA	1.06	0.944737
ETA	1.06	0.944737

Mean VIF	1.06

Source: Prepared by the researcher using **Stata 17**

The analysis of Variance Inflation Factors (VIF) **Table (5-2)** for DTA (Deposits to Total Assets) and ETA (Equity to Total Assets) reveals minimal evidence of multicollinearity. Both variables have VIF values close to 1 (1.06), indicating a low correlation. The reciprocal of the VIF, which measures the proportion of variance not explained by other variables, is also close to 1 (0.944737) for both. The mean VIF of 1.06 further supports this conclusion. Since there is no significant multicollinearity, including both DTA and ETA in a regression model is unlikely to cause problems related to multicollinearity, as they appear to be independent predictors (Field, A. 2018).

5.2.3 Heteroskedasticity Test

Heteroskedasticity occurs when the spread of data points around a regression line is uneven across different independent variable values. This means the data's variability is inconsistent, creating a situation where the error term in the regression model does not have a constant variance.

Table 5-3: Breusch–Pagan/Cook–Weisberg test for Heteroskedasticity

Variables	chi2(1)	Prob > chi2
ROA	40.29	0.0000
ROE	1.98	0.1598
NPM	0.64	0.4226

Source: Prepared by the researcher using **Stata 17**

The Breusch–Pagan/Cook–Weisberg test reveals different patterns of heteroskedasticity for the variables ROA, ROE, and NPM.

The test strongly suggests the presence of heteroskedasticity when ROA is included in the model. The high chi-squared statistic (40.29) and extremely low p-value (0.0000), very close to zero, indicate that the error term's variance is not constant across different levels of ROA.

Moreover, no significant evidence of heteroskedasticity exists when ROE is included in the model. The p-value (0.1598) is greater than 0.05, indicating that the observed variation in the error term could occur even if the variance were constant.

Like ROE, the test results for NPM do not provide sufficient evidence of heteroskedasticity. The p-value (0.4226) exceeds 0.05, suggesting that the variance of the error term is likely consistent across different levels of NPM.

In summary, only ROA strongly indicates heteroskedasticity, while ROE and NPM do not exhibit statistically significant evidence of non-constant variance in the error term. Therefore,

Robust Standard Errors will be used to solve this problem when we run the appropriate model later.

5.2.4 Correlation Matrix Between the Explanatory Variables

A correlation matrix is like a map of relationships between different variables. It is a table where each box shows how strongly two variables are connected. The numbers in the boxes are called correlation coefficients, which tell us how much one variable changes when the other changes.

Table 5-4: Correlation Matrix Table

Correlation	ROA	ROE	NPM	ETA	DTA
ROA	1.0000				
ROE	0.8250 0.0000*	1.0000			
NPM	0.8908 0.0000*	0.8417 0.0000*	1.0000		
ETA	0.7405 0.0000*	0.3267 0.0021*	0.6937 0.0000*	1.0000	
DTA	0.0505 0.6449	0.3509 0.0009*	0.1711 0.1153	-0.2351 0.0293	1.0000

Note: * Significant at 5% level

Source: Prepared by the researcher using **Stata 17** software

ROA shows strong positive correlations with ROE (0.8250, $p < 0.0001$) and NPM (0.8908, $p < 0.0001$), suggesting that as ROA increases, both ROE and NPM also tend to increase. This indicates a consistent profitability trend across different profitability metrics. ROE and NPM also exhibit a strong positive correlation (0.8417, $p < 0.0001$), reinforcing this observation. ETA has a strong positive correlation with ROA (0.7405, $p < 0.0001$), ROE (0.3276, $p < 0.0021$), and NPM (0.6937, $p < 0.0001$), indicating that a higher proportion of equity in total assets is associated with increased profitability. DTA shows a weak and statistically insignificant correlation with ROA (0.0504, $p = 0.6449$) and NPM (0.1711, $p = 0.1153$). However, it has a weak negative correlation with ETA (-0.2351, $p < 0.0293$) and a moderate positive correlation with ROE (0.3509, $p = 0.0009$). These mixed correlations suggest that the impact of DTA on profitability might be less straightforward and potentially influenced by other factors.

The significant positive correlations between profitability metrics (ROA, ROE, and NPM) and the Equity to Total Assets (ETA) ratio suggest that higher equity levels benefit Islamic banks' profitability. This indicates that well-capitalized banks, with a higher proportion of equity in their total assets, can use their capital more effectively to achieve higher returns. This advantage likely stems from the stability and confidence that equity provides, enabling

banks to engage in profitable ventures with less financial stress. In contrast, the weak and inconsistent correlations involving the Deposits to Total Assets (DTA) ratio show that the influence of deposits on profitability is less clear-cut. While a higher DTA ratio has a slight positive correlation with ROE, its association with ROA and NPM is weak, indicating that a heavy reliance on deposits does not necessarily improve overall profitability. This could be due to the unique characteristics of Islamic banking, where deposit structures and profit-sharing mechanisms differ from those in conventional banks. The negative correlation between DTA and ETA further suggests that banks with higher equity tend to rely less on deposits, preferring more stable and cost-effective funding sources. These insights highlight the importance of a balanced capital structure emphasizing sufficient equity to ensure robust profitability in the Islamic banking sector.

5.3. Empirical Results

When analyzing panel data, which captures repeated measurements of the same individuals or entities over time, three primary modeling approaches exist Fixed Effects, Random Effects, and Pooled OLS. Each method has unique characteristics and underlying assumptions that affect how the data is interpreted. This guide explores the ideal model choice for different research scenarios.

5.3.1 Pooled Ordinary Least Squares (Pooled OLS) Model

The Pooled OLS Model treats panel data as a large pooled cross-section, ignoring the panel structure and individual-specific effects. This approach assumes that there are no unobserved entity-specific effects or that they are adequately captured by the included variables (Lemmon et al., 2008).

Table 5-5: Pooled OLS Results

D.Variables	Ind.V	Coefficient	Std. Error	t-Statistic	Prob	R-squared	Adj R-squared	Prob > F
ROA	ETA	0.3073493	0.027511	11.17	0.000	0.6016	0.592	0.000
	DTA	0.0137835	0.004135	3.33	0.001			
ROE	ETA	0.8720728	0.18966	4.6	0.000	0.3012	0.2843	0.000
	DTA	0.1367843	0.028507	4.8	0.000			
NPM	ETA	4.326921	0.398095	10.87	0.000	0.5994	0.5898	0.000
	DTA	0.2960936	0.059835	4.95	0.000			

Source: Prepared by the researcher using **Stata 17** software

ROA Analysis

The regression analysis for ROA reveals that ETA and DTA significantly influence ROA. The ETA coefficient is 0.3073 ($p < 0.0001$), indicating that a one-unit increase in ETA

results in a 0.3073 ROA. Similarly, DTA has a coefficient of 0.0138 ($p = 0.001$), showing a positive but smaller effect on ROA. The model explains 60.16% of the variation in ROA (R-squared = 0.6016), indicating a strong fit. The model's overall significance ($F(2, 83) = 62.67$, $p < 0.0001$) confirms that ETA and DTA together significantly explain ROA variations.

Significant positive relationship between ETA and ROA highlights the importance of equity in boosting profitability. Higher equity levels give Islamic banks greater financial stability and the ability to generate returns from their assets, reducing financial distress costs and enhancing growth opportunities. While DTA also positively impacts ROA, its effect is smaller, suggesting that deposits contribute to profitability but are less influential than equity. This reflects the unique funding structures in Islamic banking, where profit-sharing mechanisms and depositor behavior differ from conventional banks, leading to varied impacts on profitability.

ROE Analysis

In the regression analysis for ROE, ETA and DTA are significant predictors. ETA has a coefficient of 0.8721 ($p < 0.0001$), indicating a strong positive impact on ROE. DTA has a coefficient of 0.1368 ($p < 0.0001$), also showing a significant positive effect. The model explains 30.12% of the variation in ROE (R-squared = 0.3012), indicating a moderate fit. The overall model significance ($F(2, 83) = 17.88$, $p < 0.0001$) demonstrates that ETA and DTA significantly contribute to ROE variations.

Positive coefficients for ETA and DTA on ROE suggest that equity and deposits enhance shareholder returns in Islamic banks. The strong impact of ETA indicates that well-capitalized banks with substantial equity achieve higher returns on equity due to increased investor confidence and profitable investments. The positive but smaller coefficient for DTA implies that deposits contribute to profitability, though to a lesser extent. This may be due to the reliance on profit-sharing and the distinctive nature of Islamic banking deposits, which may not provide as strong a return on equity as equity capital.

NPM Analysis

The regression results for NPM show that ETA and DTA are highly significant predictors. The ETA coefficient is 4.3269 ($p < 0.0001$), indicating a substantial positive impact on NPM. DTA has a coefficient of 0.2961 ($p < 0.0001$), also showing a positive effect. The model explains 59.94% of the variation in NPM (R-squared = 0.5994), indicating a strong fit. The model's overall significance ($F(2, 83) = 62.10$, $p < 0.0001$) confirms that ETA and DTA together significantly explain NPM variations.

Strong positive coefficient for ETA on NPM highlights the critical role of equity in maximising profit margins for Islamic banks. A higher equity ratio gives these banks a solid capital base, enhancing their ability to generate higher profit margins through reduced funding costs and increased operational efficiency. Although smaller, the positive impact of DTA indicates that deposits also boost profit margins. This may be due to the effective utilisation of deposits through profit-sharing mechanisms aligned with Sharia principles, contributing to overall profitability. These findings underscore the importance of maintaining a balanced capital structure to optimise profitability and sustain growth in the Islamic banking sector.

5.3.2 Fixed Effects Model (FEM)

The Fixed Effects Model accounts for time-invariant characteristics of the entities being studied, allowing for control over unobserved heterogeneity. This model assumes that individual-specific effects are correlated with the independent variables, making it suitable when such a correlation exists (Baetschmann et al., 2020).

Table 5-6: Fixed Effects Results

D.Variables	Ind.V	Coefficient	Std. Error	t-Statistic	Prob	R-squared (within)	Prob > F
ROA	ETA	0.246	0.0413	5.96	0.000	0.391	0.0000
	DTA	0.0578	0.0203	2.85	0.006		
ROE	ETA	-0.0125	0.2657	-0.05	0.963	0.1558	0.0012
	DTA	0.493	0.1307	3.77	0.000		
NPM	ETA	1.4975	0.4524	3.31	0.001	0.2909	0.0000
	DTA	0.8922	0.2225	4.01	0.000		

Source: Prepared by the researcher using **Stata 17** software

ROA Analysis

The fixed-effects regression model for ROA shows that both ETA and DTA are significant predictors. The coefficient for ETA is 0.2460 ($p < 0.0001$), indicating a significant positive impact on ROA. DTA also has a significant positive coefficient of 0.0578 ($p = 0.006$), though its effect is smaller than ETA. The model explains 39.10% of the within-group variance in ROA (R-squared within = 0.3910). The overall significance of the model ($F(2,79) = 25.36$, $p < 0.0001$) indicates that the predictors collectively explain a significant portion of the variance in ROA.

Strong positive relationship between ETA and ROA suggests that higher equity levels are crucial for enhancing profitability in Islamic banks. This implies that banks with higher equity ratios can leverage their capital more effectively, achieving better asset returns due to increased financial stability and reduced risk. Although DTA also positively affects ROA, its

impact is less pronounced, indicating that while deposits contribute to profitability, their role is secondary to equity. This finding aligns with the unique funding structures in Islamic banking, where profit-sharing mechanisms and the lower cost of equity compared to deposits may lead to more effective asset utilization and higher profitability.

ROE Analysis

The fixed-effects model for ROE reveals that DTA is a significant predictor with a positive coefficient of 0.4930 ($p < 0.0001$), indicating a substantial impact on ROE. However, the coefficient for ETA is not significant (-0.0125, $p = 0.963$), suggesting that equity does not have a significant effect on ROE in this model. The model explains 15.58% of the within-group variance in ROE (R-squared within = 0.1558). The overall model significance ($F(2,79) = 7.29$, $p = 0.0012$) confirms that DTA and ETA collectively influence ROE, although ETA's contribution is negligible.

Significant positive impact of DTA on ROE suggests that deposits are a vital funding source for enhancing shareholder returns in Islamic banks. This could be due to the profit-sharing nature of Islamic deposits, which allows banks to generate higher returns on equity by effectively utilising depositor funds. In contrast, the non-significant effect of ETA on ROE indicates that equity does not play a crucial role in determining shareholder returns within the fixed-effects framework. This might reflect the unique capital structure of Islamic banks, where depositor relationships and profit-sharing arrangements play a more prominent role in driving profitability than traditional equity.

NPM Analysis

The fixed-effects regression for NPM shows that both ETA and DTA are significant predictors. The coefficient for ETA is 1.4975 ($p = 0.001$), indicating a strong positive impact on NPM. DTA also has a significant positive coefficient of 0.8922 ($p < 0.0001$), showing a substantial effect on NPM. The model explains 29.09% of the within-group variance in NPM (R-squared within = 0.2909). The overall model significance ($F(2,79) = 16.20$, $p < 0.0001$) confirms that the predictors significantly explain variations in NPM.

Substantial positive coefficients for both ETA and DTA on NPM highlight the importance of both equity and deposits in maximizing profit margins for Islamic banks. The significant impact of ETA suggests that higher equity levels provide a solid capital base, enabling banks to achieve higher profit margins through reduced funding costs and increased operational efficiency. Similarly, the strong positive effect of DTA indicates that deposits are also crucial for profitability, likely due to the effective utilization of depositor funds through profit-sharing mechanisms that align with Sharia principles. These findings emphasize the need for a balanced capital structure that leverages equity and deposits to optimize profitability and sustain growth in the Islamic banking sector.

5.3.3 Random Effects Model (REM)

The Random Effects Model, on the other hand, assumes that individual-specific effects are uncorrelated with the independent variables. This model is appropriate when the unobserved heterogeneity is random and not correlated with the predictors, allowing for both within-entity and between-entity variations to be utilized (Ebrahimi et al., 2010).

Table 5-7: Random Effects Results

D.Variables	Ind.V	Coefficient	Std. Error	t-Statistic	Prob	R-squared (within)	Prob > F
ROA	ETA	0.3056	0.0283	10.81	0.000	0.352	0.000
	DTA	0.014	0.0043	3.23	0.001		
ROE	ETA	0.8721	0.1897	4.6	0.000	0.0291	0.000
	DTA	0.1368	0.0285	4.8	0.000		
NPM	ETA	2.9267	0.4518	6.48	0.000	0.2068	0.000
	DTA	0.3295	0.0925	3.56	0.000		

Source: Prepared by the researcher using **Stata 17** software

ROA Analysis

The random-effects model for ROA shows that both ETA and DTA are significant predictors. The coefficient for ETA is 0.3056 ($p < 0.0001$), indicating a strong positive impact on ROA. Similarly, DTA has a coefficient of 0.0140 ($p = 0.001$), showing a positive but smaller effect. The model explains 60.16% of the overall variance in ROA (overall R-squared = 0.6016). The significance of the model is confirmed by the Wald chi-squared test ($\chi^2(2) = 117.52$, $p < 0.0001$), indicating that ETA and DTA significantly explain variations in ROA.

Positive relationship between ETA and ROA suggests that higher equity levels benefit Islamic banks' profitability. This indicates that banks with higher equity ratios can utilize their capital more effectively, resulting in better asset returns due to enhanced financial stability and lower financial distress costs. While DTA also positively impacts ROA, its effect is smaller, suggesting that deposits contribute to profitability but are less influential than equity. This may reflect the unique characteristics of Islamic banking, where equity plays a more critical role in maintaining financial health and supporting profitable operations.

ROE Analysis

The random-effects model for ROE reveals that both ETA and DTA are significant predictors. ETA has a coefficient of 0.8721 ($p < 0.0001$), indicating a substantial positive impact on ROE. DTA also shows a significant positive coefficient of 0.1368 ($p < 0.0001$). The model explains 30.12% of the overall variance in ROE (overall R-squared = 0.3012). The Wald chi-squared test (χ^2 (2) = 35.77, $p < 0.0001$) confirms the model's significance, demonstrating that ETA and DTA together significantly influence ROE.

ETA and DTA's significant positive impact on ROE suggest that equity and deposits are vital for enhancing shareholder returns in Islamic banks. The strong influence of ETA implies that well-capitalized banks with substantial equity can achieve higher returns on equity, likely due to increased investor confidence and the ability to undertake profitable investments. The positive effect of DTA indicates that deposits also play an important role in profitability, possibly due to the profit-sharing nature of Islamic deposits, which allows banks to generate higher returns on equity by effectively utilizing depositor funds.

NPM Analysis

The random-effects model for NPM shows that both ETA and DTA are significant predictors. The coefficient for ETA is 2.9267 ($p < 0.0001$), indicating a substantial positive impact on NPM. DTA also has a significant positive coefficient of 0.3295 ($p < 0.0001$). The model explains 55.87% of the overall variance in NPM (overall R-squared = 0.5587). The Wald chi-squared test ($\chi^2(2) = 51.29$, $p < 0.0001$) confirms the model's significance, indicating that ETA and DTA significantly explain variations in NPM.

Positive coefficients for both ETA and DTA on NPM highlight the importance of both equity and deposits in maximizing profit margins for Islamic banks. The strong impact of ETA suggests that higher equity levels provide a solid capital base, enabling banks to achieve higher profit margins through reduced funding costs and increased operational efficiency. Similarly, the positive effect of DTA indicates that deposits are also crucial for profitability, likely due to the effective utilization of depositor funds through profit-sharing mechanisms that align with Sharia principles. These findings emphasize the need for a balanced capital structure that leverages equity and deposits to optimize profitability and sustain growth in the Islamic banking sector.

5.3.4 Breusch-Pagan Lagrange Multiplier (LM) Test

The Breusch-Pagan test, a type of Lagrange Multiplier test, helps determine if the variability of the errors in a linear regression model is consistent for all data points. It checks whether the spread of the data points around the regression line is the same for all independent variable values (Breusch & Pagan, 1979).

ROA:

Table 5-8: The Results of the Breusch-Pagan Lagrange Multiplier (LM) Test ROA

Variable	Var	SD = sqrt (Var)
ROA	0.0002439	0.0156189
e	9.34E-05	0.0096669
u	6.28E-07	0.0007923
chibar2(01)	0.25	
Prob > chibar2	0.3087	

Source: Prepared by the researcher using **Stata 17** software

The results of the Breusch-Pagan test suggest that a random effects model is not needed to explain the Return on Assets (ROA) in this situation. The test statistic and p-value both indicate that there is no significant evidence of heteroscedasticity in the data. This means we can use a simpler pooled OLS model instead of a more complex random effects model.

ROE:

Table 5-9: The Results of the Breusch-Pagan Lagrange Multiplier (LM) Test ROE

Variable	Var	SD = sqrt (Var)
ROE	0.0066095	0.081299
e	0.0038677	0.062191
u	0	0
chibar2(01)	0.00	
Prob > chibar2	1.0000	

Source: Prepared by the researcher using **Stata 17** software

The p-value is significantly higher than 0.05; we cannot reject the null hypothesis, which states that the variance of the random effect is zero. Consequently, the random effects model does not offer a substantial improvement over the pooled OLS model for this data set. This indicates that the pooled OLS model is adequate, and there is no meaningful random effect to consider.

NPM:

Table 5-10: The Results of the Breusch-Pagan Lagrange Multiplier (LM) Test NPM

Variable	Var	SD = sqrt (Var)
NPM	0.0508012	0.225391
e	0.0112109	0.105882
u	0.0018359	0.042847
chibar2(01)	16.92	
Prob > chibar2	0.0000	

Source: Prepared by the researcher using **Stata 17** software

The p-value is well below 0.05, so we reject the null hypothesis that the variance of the random effect is zero. This suggests that the random effects model significantly outperforms the pooled OLS model for this data set. Therefore, the random effects model should be employed to account for the variability due to random effects.

5.3.5 Hausman Test

The Hausman test determines the appropriate estimator for panel data models by comparing the consistency of the fixed effects (FE) and random effects (RE) estimators. It examines

whether unobserved individual-specific effects are correlated with the independent variables, which would necessitate a fixed effects model, or if they are uncorrelated, making a random effects model appropriate (Nijman & Verbeek, 1992).

ROA:

Table 5-11: The Results of the Hausman Test ROA

Variable	Coefficients		Difference (b-B)	Std. err
	fe (b)	re (B)		
ETA	0.246017	0.305643	-0.059626	0.0301
DTA	0.057836	0.01397	0.043867	0.01985
Chi2(2) = 6.89, Prob > chi2 = 0.0319				

Source: Prepared by the researcher using **Stata 17** software

The p-value is below 0.05; we reject the null hypothesis, which suggests that the coefficient differences are not random. Therefore, the fixed effects model is more suitable for this data as it offers consistent and dependable estimates under both hypotheses.

ROE:

Table 5-12: The Results of the Hausman Test ROE

Variable	Coefficients		Difference (b-B)	Std. err
	fe (b)	re (B)		
ETA	-0.012514	0.872073	-0.884587	0.186122
DTA	0.493022	0.136784	0.356237	0.127549
chi2(2) = 24.65, Prob > chi2 = 0.0000				

Source: Prepared by the researcher using **Stata 17** software

The p-value is 0.0000, so we reject the null hypothesis, which suggests that the coefficient differences are not random. Therefore, the fixed effects model is more suitable for this data as it offers consistent and dependable estimates under both hypotheses.

NPM:

Table 5-13: The Results of the Hausman Sigmamore Test NPM

Variable	Coefficients		Difference (b-B)	Std. err
	fe (b)	re (B)		
ETA	1.497521	2.926707	-1.429186	0.286464
DTA	0.892222	0.329482	0.56274	0.246328
Chi2(2) = 25.06, Prob > chi2 = 0.0000				

Source: Prepared by the researcher using **Stata 17** software

With a p-value of 0.0000, we reject the null hypothesis, indicating that the coefficient differences are systematic. Thus, the fixed effects model is more appropriate for this data, providing consistent and reliable estimates. The Sigmamore option adjusts for inconsistencies in the variance-covariance matrix, yielding more accurate test statistics when standard Hausman test assumptions are unmet. This adjustment confirms that the fixed effects model is the correct choice for the data.

5.3.6 White's Robust Standard Errors

Weighted Least Squares (WLS) regression adjusts for heteroskedasticity by weighting observations inversely to their variance. This method ensures more accurate coefficient estimates and reliable statistical inferences than ordinary least squares (OLS) when the error variance is not constant (Suykens et al., 2002).

Table 5-14: The results of WLS Regression with Robust Standard Errors Option ROA

D.Variables	Ind.Variables	Coefficient	Std. Error	t-Statistic	Prob	R-squared	Adj R-squared	Prob > F
ROA	ETA	0.3099	0.002	152.62	0.000	0.9966	0.9966	0.000
	DTA	0.0143	0.0003	43.9	0.000			

Source: Prepared by the researcher using **Stata 17** software

The Breusch–Pagan/Cook–Weisberg test for heteroskedasticity on the initial model for ROA yielded a chi-squared value of 40.29 with a p-value of 0.0000, indicating significant heteroskedasticity (i.e., the error terms do not have constant variance). To address this issue, the model was re-estimated using weighted least squares (WLS), where weights were the inverse of the squared residuals. The new model's F-statistic is 12309.35 with a p-value of 0.0000, indicating that the overall model is highly significant. The R-squared value is 0.9966, suggesting that the model explains 99.66% of the variance in ROA. ETA and DTA remain highly significant predictors, with t-values of 152.62 and 43.90, respectively, and shallow standard errors, indicating precise estimates. The Breusch–Pagan/Cook–Weisberg test, after applying WLS, shows a chi-squared value of 0.00 with a p-value of 0.9649, indicating that heteroskedasticity has been effectively addressed.

The robust model reaffirms the significant positive relationship between ETA and ROA, with a coefficient of 0.3099. This suggests that higher equity levels lead to higher returns on assets, reinforcing the importance of maintaining strong equity positions to enhance profitability. Similarly, DTA also positively impacts ROA, with a coefficient of 0.0143, though its effect remains smaller than ETA's. This indicates that deposits contribute to profitability, but their influence is less pronounced than equity. The high R-squared value in the robust model indicates a solid fit, suggesting that the model variables, including the fixed effects for

equity and deposits, are highly effective in explaining the variation in ROA. This finding highlights the critical role of a balanced capital structure in maximizing asset returns for Islamic banks, emphasizing the need for strategic equity management and efficient utilization of deposits.

5.4. Conclusion

This chapter's detailed data analysis reveals the crucial influence of capital structure on the profitability of Islamic banks. The statistical tests and regression models highlight the significant roles of ETA and DTA in shaping financial outcomes. Weighted Least Square (WLS) is most appropriate for ROA; the Fixed Effects Model (FEM) proved to be the most appropriate for analyzing NPM, showing that individual-specific effects correlate with the independent variables. The Pooled OLS Model for ROE is more appropriate. The Breusch-Pagan and Hausman test further supports the findings, which confirm the presence of heteroskedasticity and validate the use of the weighted least square model. Overall, the evidence strongly suggests that capital structure significantly impacts Islamic banks' profitability, offering a robust basis for strategic financial decisions. This analysis adds to academic knowledge and has practical implications for policymakers and financial managers in the Islamic banking sector.

Chapter Six: Conclusion, Policy Implication, and Future Research Directions

6.1. Introduction

6.2. Conclusion of Findings

6.3. Policy Implications

6.4. Futures Research Directions

6.5. Conclusion

6.1. Introduction

This chapter delves into the key findings from our detailed analysis of the impact of capital structure on the profitability of Islamic banks, specifically focusing on ETA and DTA. By leveraging various statistical tests and regression models, we have elucidated these variables' significant roles in determining financial performance metrics such as ROA, ROE, and NPM. This chapter synthesizes the empirical results into actionable insights, outlining the strategic implications for policymakers and financial managers. It also proposes future research directions to enhance further our understanding of the dynamic interplay between capital structure and profitability in the Islamic banking sector.

6.2. Conclusion of Findings

The analysis revealed several important insights into the relationship between capital structure and profitability in Islamic banks. First, ETA was found to have a significant positive impact on ROA, ROE, and NPM, indicating that higher equity levels are associated with better profitability and more efficient asset utilization. This suggests that equity provides a stable capital base, enhancing the banks' ability to generate returns and maintain financial health. Second, DTA positively correlated with all three profitability measures: ROA, ROE, and NPM. This finding underscores the importance of deposits in the profitability framework of Islamic banks. However, the impact of DTA on ROA, ROE, and NPM was less pronounced than that of ETA, suggesting that while deposits are vital, they do not contribute as significantly to profitability as equity.

The results from the Breusch and Pagan Lagrangian Multiplier test indicated that random effects were not significant for ROA and ROE, supporting the use of linear regression models for these measures. However, Fixed effects were significant for NPM, indicating unobserved heterogeneity affecting profit margins.

The Fixed Effects Model (FEM) was identified as the most suitable for analyzing NPM, indicating that bank-specific characteristics significantly influence this profitability measure. The Linear Regression Model (WLS and Pooled OLS) was more appropriate for ROA and ROE.

The Breusch-Pagan and Hausman tests confirmed the presence of heteroskedasticity in the ROA model. The robust statistical evidence from various tests and models strongly suggests that capital structure significantly impacts the financial performance of Islamic banks. The analysis underscores the critical roles of ETA and DTA in shaping

financial outcomes, providing a solid empirical basis for strategic financial decisions in the Islamic banking sector.

6.3. Policy Implications

The findings of this study have significant implications for policymakers and financial managers in the Islamic banking sector:

Strengthening Equity Positions: The strong positive correlation between equity levels and profitability suggests that Islamic banks should focus on strategies to enhance their equity bases. This could include retaining earnings, equity financing, and forming strategic partnerships to improve financial stability and profitability.

Optimizing Deposit Utilization: Although deposits contribute positively to profitability, their impact is less significant than equity. Policymakers should ensure that deposit structures are optimized through innovative profit-sharing mechanisms aligned with Sharia principles, maximizing their contribution to the bank's profitability.

Regulatory Frameworks: Regulatory authorities should consider developing frameworks that promote the balanced growth of both equity and deposits. Policies that encourage equity investments and protect depositor interests can help create a more stable and profitable Islamic banking environment.

Risk Management: The study highlights the importance of robust risk management practices. Islamic banks should implement comprehensive risk assessment frameworks to manage the potential volatility associated with deposits and to leverage their equity more effectively, thereby mitigating financial distress.

6.4. Future Research Directions

This study paves the way for future research to delve deeper into the relationship between capital structure and profitability in Islamic banking:

Broader Sample and Longer Periods: Expanding the sample size to include more countries and extending the study period beyond 2022 would enhance the generalizability of the findings and capture long-term trends in the Islamic banking sector.

Comparative Analysis: Comparative studies between Islamic and conventional banks could provide deeper insights into the unique characteristics and advantages of Islamic banking, helping to identify best practices and areas for improvement.

Impact of External Factors: Investigating the effects of macroeconomic variables such as inflation rates, economic growth, and regulatory changes on the profitability of Islamic banks would offer a more comprehensive understanding of the external factors influencing financial performance.

Technological Advancements: It would be valuable to examine the role of technological advancements, such as digital banking and fintech innovations, in shaping the capital structure and profitability of Islamic banks. This research could highlight how technology can be leveraged to enhance financial performance and customer satisfaction.

Qualitative Analysis: Incorporating qualitative methods, such as interviews with industry experts and case studies of individual banks, could provide richer contextual insights into the strategic decisions and operational practices that influence profitability.

By addressing these areas, future research can build on this study's findings, offering a more nuanced understanding of the interplay between capital structure and profitability in the evolving landscape of Islamic banking.

6.5. Conclusion

This chapter underscores the critical impact of capital structure on the profitability of Islamic banks, supported by robust statistical evidence. Our results show that higher equity levels significantly boost profitability across various metrics, while deposits also have a positive but less pronounced effect. The Fixed Effects Model (FEM) is identified as the most suitable for analyzing NPM, highlighting the significance of bank-specific characteristics. For ROA and ROE, the analysis utilized different models; ROA was effectively analyzed using Weighted Least Squares (WLS), and ROE was best examined using the Pooled Ordinary Least Squares (Pooled OLS) model. These findings provide a robust empirical foundation for strategic financial decision-making in Islamic banking, emphasizing the importance of a balanced capital structure. Additionally, this chapter outlines practical policy implications and proposes future research directions to enhance our understanding and support the growth and stability of the Islamic banking sector.

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Appendices

Appendices

Results of Unit Root Tests:

Figure1 : Unit Root Test ETA

```
H0: All panels contain unit roots           Number of panels       =      5
Ha: Some panels are stationary              Avg. number of periods =  17.20

AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
Panel means:  Included                                   sequentially
Time trend:   Not included

ADF regressions: No lags included
```

	Statistic	p-value	Fixed-N exact critical values 1%	5%	10%
t-bar	-2.0723		(Not available)		
t-tilde-bar	-1.8182				
Z-t-tilde-bar	-1.3303	0.0917			

Figure2 : Unit Root Test DTA

```
Im-Pesaran-Shin unit-root test for DTA

H0: All panels contain unit roots           Number of panels       =      5
Ha: Some panels are stationary              Avg. number of periods =  17.20

AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
Panel means:  Included                                   sequentially
Time trend:   Not included

ADF regressions: No lags included
```

	Statistic	p-value	Fixed-N exact critical values 1%	5%	10%
t-bar	-2.8438		(Not available)		
t-tilde-bar	-2.0474				
Z-t-tilde-bar	-2.0056	0.0225			

Appendices

Figure3 : Unit Root Test ROA

Im-Pesaran-Shin unit-root test for ROA

H0: All panels contain unit roots — Number of panels = 5
Ha: Some panels are stationary — Avg. number of periods = 17.20

AR parameter: Panel-specific — Asymptotics: T,N -> Infinity sequentially
Panel means: Included
Time trend: Not included

ADF regressions: No lags included

	Statistic	p-value	Fixed-N exact critical values 1%	5%	10%
t-bar	-2.3808		(Not available)		
t-tilde-bar	-2.0052				
Z-t-tilde-bar	-1.8813	0.0300			

Figure4 : Unit Root Test ROE

Im-Pesaran-Shin unit-root test for ROE

H0: All panels contain unit roots — Number of panels = 5
Ha: Some panels are stationary — Avg. number of periods = 17.20

AR parameter: Panel-specific — Asymptotics: T,N -> Infinity sequentially
Panel means: Included
Time trend: Not included

ADF regressions: No lags included

	Statistic	p-value	Fixed-N exact critical values 1%	5%	10%
t-bar	-2.9823		(Not available)		
t-tilde-bar	-2.3071				
Z-t-tilde-bar	-2.7712	0.0028			

Appendices

Figure5 : Unit Root Test NPM

```
H0: All panels contain unit roots           Number of panels       =      5
Ha: Some panels are stationary              Avg. number of periods =  17.20

AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
Panel means:  Included                                   sequentially
Time trend:   Not included

ADF regressions: No lags included
```

	Statistic	p-value	Fixed-N exact critical values 1%	5%	10%
t-bar	-2.4400		(Not available)		
t-tilde-bar	-1.9248				
Z-t-tilde-bar	-1.6443	0.0501			

Estimation Regress:

Figure6 : Pooled Eq 1: ROA DTA ETA

Source	SS	df	MS		
Model	.012474762	2	.006237381	Prob > F	= 0.0000
Residual	.008260866	83	.000099529	R-squared	= 0.6016
Total	.020735629	85	.000243949	Adj R-squared	= 0.5920
				Root MSE	= .00998

Number of obs = 86
F(2, 83) = 62.67

ROA	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.0137835	.004135	3.33	0.001	.005559	.0220079
ETA	.3073493	.0275111	11.17	0.000	.2526308	.3620679
_cons	-.0275447	.0047882	-5.75	0.000	-.0370682	-.0180213

Figure7 : Fixed Effect : Eq1 ROA DTA ETA

```
Fixed-effects (within) regression           Number of obs     =         86
Group variable: ID                          Number of groups  =          5

R-squared:                                  Obs per group:
     Within  = 0.3910                                       min =         14
     Between = 0.3202                                       avg =       17.2
     Overall = 0.2476                                       max =         20

                                            F(2,79)           =      25.36
corr(u_i, Xb) = -0.6592                     Prob > F          =     0.0000
```

ROA	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.0578363	.0203154	2.85	0.006	.0173995	.0982732
ETA	.2460168	.0413052	5.96	0.000	.1638009	.3282327
_cons	-.0452472	.0120729	-3.75	0.000	-.0692778	-.0212166
sigma_u	.01446546					
sigma_e	.00966691					
rho	.69127999	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(4, 79) = 2.35                     Prob > F = 0.0613
```

Appendices

Figure8 : Random Effects : Eq1 ROA DTA ETA

```
Random-effects GLS regression                   Number of obs     =         86
Group variable: ID                              Number of groups  =          5

R-squared:                                      Obs per group:
     Within  = 0.3520                                         min =         14
     Between = 0.9749                                         avg =       17.2
     Overall = 0.6016                                         max =         20

                                                Wald chi2(2)      =     117.52
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000
```

ROA	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
DTA	.0139698	.0043253	3.23	0.001	.0054923	.0224473
ETA	.3056429	.0282862	10.81	0.000	.250203	.3610829
_cons	-.0274353	.004928	-5.57	0.000	-.0370941	-.0177766
sigma_u	.00079226					
sigma_e	.00966691					
rho	.0066719	(fraction of variance due to u_i)				

Figure9 : Hausman Test: Eq1

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
DTA	.0578363	.0139698	.0438665	.0198496
ETA	.2460168	.3056429	-.0596262	.0301

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

```
Test of H0: Difference in coefficients not systematic

    chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            =   6.89
Prob > chi2 = 0.0319
```

Figure10 : Breusch Pagan test Eq1

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ROA[ID,t] = Xb + u[ID] + e[ID,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                 --------+------------------------------
                     ROA |    .0002439       .0156189
                       e |    .0000934       .0096669
                       u |   6.28e-07       .0007923

        Test: Var(u) = 0
                                 chibar2(01) =     0.25
                              Prob > chibar2 =   0.3087
```

EQ 2;

Figure11 : Pooled Eq2 ROE DTA ETA

Source	SS	df	MS		
Model	.169199074	2	.084599537	Number of obs	= 86
Residual	.39260891	83	.004730228	F(2, 83)	= 17.88
				Prob > F	= 0.0000
Total	.561807983	85	.006609506	R-squared	= 0.3012
				Adj R-squared	= 0.2843
				Root MSE	= .06878

ROE	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.1367843	.0285067	4.80	0.000	.0800855	.1934831
ETA	.8720728	.1896601	4.60	0.000	.4948466	1.249299
_cons	-.0451632	.0330092	-1.37	0.175	-.1108172	.0204908

Figure12 : Fixed Effect Eq2 ROE DTA ETA

Fixed-effects (within) regression — Number of obs = 86
Group variable: ID — Number of groups = 5

R-squared:
Within = 0.1558
Between = 0.3253
Overall = 0.1221

Obs per group:
min = 14
avg = 17.2
max = 20

F(2,79) = 7.29
corr(u_i, Xb) = -0.9120 — Prob > F = 0.0012

ROE	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.4930217	.130696	3.77	0.000	.2328778	.7531656
ETA	-.0125145	.2657301	-0.05	0.963	-.5414371	.5164082
_cons	-.1391028	.0776693	-1.79	0.077	-.2936998	.0154941
sigma_u	.1251558					
sigma_e	.06219048					
rho	.80197984	(fraction of variance due to u_i)				

F test that all u_i=0: F(4, 79) = 5.63 — Prob > F = 0.0005

Figure13 : Random Effect Eq2 ROE DTA ETA

Random-effects GLS regression — Number of obs = 86
Group variable: ID — Number of groups = 5

R-squared:
Within = 0.0291
Between = 0.9251
Overall = 0.3012

Obs per group:
min = 14
avg = 17.2
max = 20

Wald chi2(2) = 35.77
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

ROE	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
DTA	.1367843	.0285067	4.80	0.000	.0809121	.1926565
ETA	.8720728	.1896601	4.60	0.000	.5003459	1.2438
_cons	-.0451632	.0330092	-1.37	0.171	-.1098601	.0195337
sigma_u	0					
sigma_e	.06219048					
rho	0	(fraction of variance due to u_i)				

Appendices

Figure14 : Hausman Test Results: Eq2

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
DTA	.4930217	.1367843	.3562374	.1275493
ETA	-.0125145	.8720728	-.8845873	.1861225

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 24.65
Prob > chi2 = 0.0000

Figure15 : Breusch Pagan test Results Eq2

Breusch and Pagan Lagrangian multiplier test for random effects

ROE[ID,t] = Xb + u[ID] + e[ID,t]

Estimated results:

	Var	SD = sqrt(Var)
ROE	.0066095	.0812989
e	.0038677	.0621905
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00
Prob > chibar2 = 1.0000

EQ 3:

Figure16 : Pooled Eq3 NPM DTA ETA

Source	SS	df	MS		
				Number of obs	= 86
				F(2, 83)	= 62.10
Model	2.58836165	2	1.29418082	Prob > F	= 0.0000
Residual	1.72973966	83	.020840237	R-squared	= 0.5994
				Adj R-squared	= 0.5898
Total	4.31810131	85	.050801192	Root MSE	= .14436

NPM	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.2960936	.0598354	4.95	0.000	.1770834	.4151037
ETA	4.326921	.3980945	10.87	0.000	3.535127	5.118715
_cons	-.3708067	.069286	-5.35	0.000	-.5086138	-.2329996

Appendices

Figure17 : Fixed Model Eq3 NPM DTA ETA

```
Fixed-effects (within) regression               Number of obs     =         86
Group variable: ID                              Number of groups  =          5

R-squared:                                      Obs per group:
     Within  = 0.2909                                         min =         14
     Between = 0.2003                                         avg =       17.2
     Overall = 0.1267                                         max =         20

                                                F(2,79)           =      16.20
corr(u_i, Xb) = -0.6396                         Prob > F          =     0.0000
```

NPM	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
DTA	.8922215	.2225149	4.01	0.000	.4493167	1.335126
ETA	1.497521	.4524156	3.31	0.001	.5970104	2.398032
_cons	-.3571558	.132235	-2.70	0.008	-.620363	-.0939487
sigma_u	.25606151					
sigma_e	.10588164					
rho	.85398342	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(4, 79) = 18.82                     Prob > F = 0.0000
```

Figure18 : Random Effect q3 NPM DTA ETA

```
Random-effects GLS regression                   Number of obs     =         86
Group variable: ID                              Number of groups  =          5

R-squared:                                      Obs per group:
     Within  = 0.2068                                         min =         14
     Between = 0.8379                                         avg =       17.2
     Overall = 0.5587                                         max =         20

                                                Wald chi2(2)      =      51.29
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000
```

NPM	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
DTA	.3294816	.0925161	3.56	0.000	.1481534	.5108097
ETA	2.926707	.4518334	6.48	0.000	2.04113	3.812284
_cons	-.2101826	.0850264	-2.47	0.013	-.3768312	-.043534
sigma_u	.04284716					
sigma_e	.10588164					
rho	.1407149	(fraction of variance due to u_i)				

Appendices

Figure19 : Hausman Test : Eq3

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
DTA	.8922215	.3294816	.56274	.2023701
ETA	1.497521	2.926707	-1.429186	.0229451

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= -131.88

Warning: chi2 < 0 ==> model fitted on these data
fails to meet the asymptotic assumptions
of the Hausman test; see **suest** for a
generalized test.

Figure20 : Hausman Fixed Random Sigmamore

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
DTA	.8922215	.3294816	.56274	.2463278
ETA	1.497521	2.926707	-1.429186	.2864642

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 25.06
Prob > chi2 = 0.0000

Figure21 : Breusch and Pagan

Breusch and Pagan Lagrangian multiplier test for random effects

NPM[ID,t] = Xb + u[ID] + e[ID,t]

Estimated results:

	Var	SD = sqrt(Var)
NPM	.0508012	.2253912
e	.0112109	.1058816
u	.0018359	.0428472

Test: Var(u) = 0
chibar2(01) = 16.92
Prob > chibar2 = 0.0000

Appendices

Figure22 : Statistical Description:

Variable	N	Mean	SD	Min	p50	Max
ROA	86	.019346	.0156189	.0001574	.015854	.0870867
ROE	86	.1443558	.0812989	.0013339	.1346557	.4420403
NPM	86	.3483284	.2253912	.002011	.3591506	.9829063
ETA	86	.1266366	.0404669	.0745525	.1312558	.2857597
DTA	86	.5781559	.269233	.0202188	.7412195	.8869833

Figure23 : Multicollinearity Test: VIF

Variable	VIF	1/VIF
DTA	1.06	0.944737
ETA	1.06	0.944737
Mean VIF	1.06	

Figure24 : Heteroskedasticity Test ROA

```
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of ROA

H0: Constant variance

    chi2(1) =  40.29
Prob > chi2 = 0.0000
```

Figure25 : Heteroskedasticity Test ROE

```
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of ROE

H0: Constant variance

    chi2(1) =   1.98
Prob > chi2 = 0.1598
```

Appendices

Figure26 : Heteroskedasticity Test NPM

```
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of NPM

H0: Constant variance

    chi2(1) =   0.64
Prob > chi2 = 0.4226
```

Figure27 : White's Robust Standard Errors

Source	SS	df	MS	Number of obs	=	86
				F(2, 83)	=	12309.35
Model	.002349824	2	.001174912	Prob > F	=	0.0000
Residual	7.9222e-06	83	9.5449e-08	R-squared	=	0.9966
				Adj R-squared	=	0.9966
Total	.002357746	85	.000027738	Root MSE	=	.00031

ROA	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
ETA	.3098528	.0020302	152.62	0.000	.3058148	.3138908
DTA	.0143039	.0003258	43.90	0.000	.0136559	.0149519
_cons	-.027992	.0003372	-83.02	0.000	-.0286626	-.0273214

Figure28 : Breusch-Pagan test After White's Robust Standard Errors

```
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of ROA

H0: Constant variance

    chi2(1) =   0.00
Prob > chi2 = 0.9649
```