Corporate Performance Analysis: An Empirical Evidence from Indian Equity Market

Thesis

Submitted to the University of Calicut

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Doctor of Philosophy in Commerce

Under the Faculty of

Commerce and Management Studies

By

ANISH SEBASTIAN

Under the Supervision and Guidance of

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February 2025

Declaration

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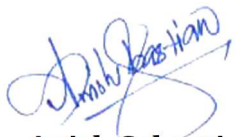

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Anish Sebastian

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List of Abbreviations

ASR	Accelerated Share Repurchases
BE	Book Equity
BLUE	Best Linear Unbiased Estimator
BoP	Balance-of-Payments
BS	Board Size
CFA	Corporate Financial Architecture
CFP	Corporate Financial Performance
CMIE	Centre for Monitoring Indian Economy
COS	Corporate Ownership Structures
CR	Current Ratio
CSP	Corporate Social Performance
DAR	Debt to Asset Ratio
DER	Debt Equity Ratio
DPR	Dividend Payout Ratio
EBD	Efficiency of Boards of Directors
EBIT	Earnings Before Interest and Taxes
EPS	Earnings Per Share
EVA	Economic Value Added
FA	Firm Age
FE	Fixed Effect Model
FMCG	Fast Moving Consumer Goods
FN	Financial News
GDP	Gross Domestic Product
GST	Goods and Services Tax
IBC	Insolvency and Bankruptcy Code
IT	Information Technology
LSDV	Least Squares Dummy Variable

MCP	Multi Country Collaborations
ME	Market Equity
MT	Modified Turnover
NBFCs	Non-Banking Financial Companies
NPM	Net Profit Margin
NSE	National Stock Exchange
OLS	Ordinary Least Square
PAT	Profit After Taxes
PBIT	Profit Before Interest and Taxes
PGR	Profit Growth Rate
PM	Profit Margin
PO	Promoter Ownership
R&D	Research and Development
RBV	Resource Based View
RCD	Relational Capital Disclosure
RE	Random Effect Model
ROA	Return on Assets
ROCE	Return on Capital Employed
ROE	Return on Equity
ROI	Return on Investment
ROS	Return on Sales
SCP	Single Country Publications
SMC	Stock Market Capitalisation
SMP	Stock Market Performance
SPE	Subsequent Period Earnings
TATO	Total Assets Turnover Ratio
TRM	Total Risk Management
UAE	United Arab Emirates

Corporate Performance Analysis: An Empirical Evidence from Indian Equity Market

Anish Sebastian
Research Scholar

Prof. (Dr.) B. Johnson
Research Supervisor

Abstract

The study provides a comprehensive analysis of the determinants of corporate performance among non-financial corporations listed in the Indian equity market. The research focuses on key financial performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) to understand the impact of significant attributes such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. The analysis is conducted across 100 top performing firms, representing ten major sectors such as Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas. These firms were selected based on their weightage in Nifty indices, ensuring a comprehensive representation of sectoral performance in the Indian financial market.

The study adopts advanced econometric techniques, including panel data regression models, fixed and random effects analysis and dummy variable, to account for both sectoral variations and temporal changes over two distinct periods as before and after 2014. The segmentation captures the economic, regulatory and structural transformations in the Indian market, particularly those introduced after 2014. By comparing pre- and post-reform periods, the research provides refined insights into how these transformations influenced corporate strategies and financial outcomes.

Empirical results reveal significant correlations between the studied attributes and corporate performance metrics, with notable sectoral differences. Factors such as firm size, capital structure and tangibility show strong relationships with ROCE, ROA and ROE, while temporal analysis highlights shift in corporate performance influenced by regulatory reforms and market dynamics. The findings underscore the crucial role of key determinants in driving financial efficiency and profitability.

This study contributes to the academic discourse by offering a sector-specific and temporal understanding of corporate performance in the Indian non-financial sector. Its practical implications extend to corporate managers, policymakers and investors, providing practical insights for optimising financial strategies, improving operational efficiency and fostering sustainable growth in a rapidly evolving economic environment.

Keywords: Corporate performance, Indian equity market, non-financial corporations, ROCE, ROA, ROE, sectoral analysis, panel data regression, regulatory reforms, temporal analysis.

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സംഗ്രഹം

ഇന്ത്യൻ ഇക്വിറ്റി മാർക്കറ്റിൽ ലിസ്റ്റ് ചെയ്തിട്ടുള്ള നോൺ-ഫിനാൻഷ്യൽ കോർപ്പറേഷനുകൾ ക്കിടയിലെ കോർപ്പറേറ്റ് പ്രകടനത്തെ നിർണ്ണയിക്കുന്ന ഘടകങ്ങളെക്കുറിച്ചുള്ള സമഗ്രമായ വിശകലനം ഈ പഠനം നൽകുന്നു. സ്ഥാപനത്തിന്റെ വലുപ്പം, മൂലധന ഘടന, ലിക്വിഡിറ്റി, ടാൻജിബിലിറ്റി, വളർച്ചാ നിരക്ക്, ബിസിനസ് റിസ്ക്, സ്ഥാപനത്തിന്റെ പ്രായം തുടങ്ങിയ സുപ്രധാന ഘടകങ്ങളുടെ സ്വാധീനം മനസ്സിലാക്കുന്നതിനായി റിട്ടേൺ ഓൺ ക്യാപിറ്റൽ എംപ്ലോയ്ഡ് (ROCE), റിട്ടേൺ ഓൺ അസറ്റ്സ് (ROA), റിട്ടേൺ ഓൺ ഇക്വിറ്റി (ROE) തുടങ്ങിയ പ്രധാന സാമ്പത്തിക പ്രകടന മെട്രിക്സുകളിൽ ഗവേഷണം ശ്രദ്ധ കേന്ദ്രീകരിക്കുന്നു. ഓട്ടോമൊബൈൽ, എഫ്എംസിജി, ഹെൽത്ത്കെയർ, ഐടി, മീഡിയ, മെറ്റൽ, ഫാർമ, റിയാലിറ്റി, കൺസ്യൂമർ ഡ്യൂറബിൾസ്, ഓയിൽ & ഗ്യാസ് തുടങ്ങിയ പത്ത് പ്രധാന മേഖലകളെ പ്രതിനിധീകരിക്കുന്ന 100 മികച്ച പ്രകടനം കാഴ്ചവയ്ക്കുന്ന സ്ഥാപനങ്ങളിലായാണ് വിശകലനം നടത്തുന്നത്. ഇന്ത്യൻ സാമ്പത്തിക വിപണിയിലെ മേഖലാ പ്രകടനത്തിന്റെ സമഗ്രമായ പ്രാതിനിധ്യം ഉറപ്പാക്കിക്കൊണ്ട് നിഫ്റ്റി സൂചികകളിലെ അവയുടെ വെയ്റ്റേജ് അടിസ്ഥാനമാക്കിയാണ് ഈ സ്ഥാപനങ്ങളെ തിരഞ്ഞെടുത്തത്.

2014 ന് മുമ്പും ശേഷവുമുള്ള രണ്ട് വ്യത്യസ്ത കാലഘട്ടങ്ങളിലെ മേഖലാ വ്യതിയാനങ്ങളും താൽക്കാലിക മാറ്റങ്ങളും കണക്കിലെടുക്കുന്നതിന്, പാനൽ ഡാറ്റ റിഗ്രഷൻ മോഡലുകൾ, ഫിക്സഡ്, റാൻഡം ഇഫക്റ്റ്സ് വിശകലനം, ഡമ്മി വേരിയബിളുകൾ എന്നിവയുൾപ്പെടെയുള്ള വിപുലമായ ഇക്കണോമെട്രിക് മോഡലുകൾ ഈ പഠനം സ്വീകരിക്കുന്നു. ഇന്ത്യൻ വിപണിയിലെ സാമ്പത്തിക, നിയന്ത്രണ, ഘടനാപരമായ പരിവർത്തനങ്ങളെ, പ്രത്യേകിച്ച് 2014 ന് ശേഷം അവതരിപ്പിച്ചവയെ ഈ സെഗ്മെന്റേഷൻ വിശദമായ പരിശോധിക്കു വിദേയമാക്കുന്നു. പരിഷ്കരണത്തിന് മുമ്പും ശേഷവുമുള്ള കാലഘട്ടങ്ങളെ താരതമ്യം ചെയ്യുന്നതിലൂടെ, ഈ പരിവർത്തനങ്ങൾ കോർപ്പറേറ്റ് തന്ത്രങ്ങളെയും സാമ്പത്തിക ഫലങ്ങളെയും എങ്ങനെ സ്വാധീനിച്ചു എന്നതിനെക്കുറിച്ചുള്ള മെച്ചപ്പെട്ട ഉൾക്കാഴ്ചകൾ ഗവേഷണം നൽകുന്നു.

പഠനവിധേയമാക്കിയ ആട്രിബ്യൂട്ടുകളും കോർപ്പറേറ്റ് പ്രകടന മെട്രിക്കുകളും തമ്മിലുള്ള ഗണ്യമായ പരസ്പരബന്ധങ്ങൾ ശ്രദ്ധേയമായ മേഖലാ വ്യത്യാസങ്ങളോടെ അനുഭവപരമായ ഫലങ്ങൾ വെളിപ്പെടുത്തുന്നു. സ്ഥാപനത്തിന്റെ വലുപ്പം, മൂലധന ഘടന, ടാൻജിബിലിറ്റി തുടങ്ങിയ ഘടകങ്ങൾ ROCE, ROA, ROE എന്നിവയുമായി ശക്തമായ ബന്ധങ്ങൾ കാണിക്കുന്നു, അതേസമയം നിയന്ത്രണ അഥവാ നിയമപരമായ പരിഷ്കാരങ്ങളും വിപണി ചലനാത്മകതയും സ്വാധീനിക്കുന്ന കോർപ്പറേറ്റ് പ്രകടനത്തിലെ മാറ്റത്തെ കാലാത്മകമായ വിശകലനം എടുത്തുകാണിക്കുന്നു. സാമ്പത്തിക കാര്യക്ഷമതയും ലാഭക്ഷമതയും ലഭിക്കുന്നതിൽ പ്രധാന ഘടകങ്ങളുടെ നിർണായക പങ്ക് കണ്ടെത്തലുകൾ അടിവരയിടുന്നു.

കോർപ്പറേറ്റ് മാനേജർമാർ, നയരൂപീകരണക്കാർ, നിക്ഷേപകർ എന്നിവർക്ക് കോർപ്പറേറ്റ് പ്രകടനത്തെക്കുറിച്ച് ഒരു മേഖലാ നിർദ്ദിഷ്ടവും കാലാത്മകവുമായ ധാരണ ലഭിക്കാൻ ഈ പഠനം സഹായിക്കുന്നു. സാമ്പത്തിക തന്ത്രങ്ങൾ ഒപ്റ്റിമൈസ് ചെയ്യുന്നതിനും പ്രവർത്തന കാര്യക്ഷമത മെച്ചപ്പെടുത്തുന്നതിനും അതിവേഗം വികസിച്ചുകൊണ്ടിരിക്കുന്ന സാമ്പത്തിക അന്തരീക്ഷത്തിൽ സുസ്ഥിര വളർച്ച കൈവരിക്കുന്നതിനുള്ള പ്രായോഗിക ഉൾക്കാഴ്ചകൾക്ക് ഈ പഠനം വഴിവെക്കുന്നു.

കീവേഡുകൾ: കോർപ്പറേറ്റ് പ്രകടനം, ഇന്ത്യൻ ഇക്വിറ്റി മാർക്കറ്റ്, നോൺ-ഫിനാൻഷ്യൽ കോർപ്പറേഷനുകൾ, ROCE, ROA, ROE, മേഖലാ വിശകലനം, പാനൽ ഡാറ്റ റിഗ്രഷൻ, റെഗുലേറ്ററി പരിഷ്കാരങ്ങൾ, കാലാത്മകമായ വിശകലനം.

Chapter I
Introduction

1.1 Introduction

Corporate performance in the Indian equity market, especially among non-financial companies, is a topic of paramount interest to researchers, investors and policymakers. The globalisation of markets and increased interconnectivity of economies has heightened the need to understand the factors that drive corporate success. Firms need to identify and leverage these variables to remain competitive and achieve sustainable growth *(Agarwal & Banga, 2013; Kurtikto Wahyudi et al., 2023; Le Thi Kim et al., 2021; Matar & Eneizan, 2018; Melwani & Sitlani, 2019)*. Unlike financial institutions, the performance of non-financial corporations presents a distinctive set of challenges and opportunities that this study aims to explore in detail.

From an Indian equity market perspective, many factors influence the performance of non-financial corporations. These attributes include factors such as firm size, capital structure, liquidity, tangibility, growth rate, business risk, firm age, etc., each of which plays a crucial role in shaping the financial performance of these corporations *(Abor, 2005; Acheampong et al., 2014; Chadha & Sharma, 2015; Chen & Chen, 2011; Corwin & Schultz, 2012; T. P. V. Le & Phan, 2017)*. Previous studies emphasised the importance of these attributes in determining key performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) *(Kassi et al., 2019; Mihaela Brindusa Tudose & Silvia Avasilcai, 2020; Rajkumar, 2014)*. However, there remains a gap for a comprehensive analysis that integrates these variables within the context of the Indian market, particularly across different sectors.

By analysing top companies across different sectors based on their Nifty indices, this research aims to provide a detailed analysis of market dynamics and sector-specific

performance. The Nifty index serves as a benchmark for the Indian stock market, providing a representative sample of top-performing companies (*Overview - NSE Indices*, 2023). Studies have highlighted the utility of these indices in capturing the performance trends of leading firms *(Ranjan Dutta et al., 2022; Sahoo & Swain, 2022)*. This study will enhance existing knowledge by exploring the links between influential attributes and corporate performance metrics.

The importance of this research is heightened by the current economic environment, where stakeholders like investors, corporate managers and policymakers are looking for effective strategies to improve corporate performance and maintain market stability. Understanding the determinants of financial success is crucial for making informed decisions *(Kassi et al., 2019; K. Li et al., 2020; Msomi, 2023; Nenu et al., 2018)*. This study seeks to address the gap in existing literature by providing in-depth insights into how influencing attributes affect financial performance, offering practical implications for strategic management and policy formulation.

In addition, this research will compare corporate performance across two distinct periods: 2010-2014 and 2015-2023. The comparison will help identify significant changes in corporate performance metrics over these two different periods, providing insights into the evolving dynamics of the Indian financial market. This temporal analysis is vital as it considers economic and regulatory reforms, along with global financial events that could have impacted corporate performance differently across these periods. Studies suggest that comparative analysis can reveal trends and shifts in market behaviour, providing a historical perspective on performance determinants *(Asaolu, 2021; Padachi, 2006)*.

In summary, this research endeavours to provide a comprehensive analysis of the determinants of corporate performance within the Indian securities market, focusing on non-financial corporations. This study aims to provide practical insights for stakeholders to enhance corporate success and achieve sustainable growth by examining the identified influencing factors and their relationship with key performance metrics. The integration of multiple reviewed citations ensures that the

study is grounded in existing research while contributing new perspectives to the ongoing discourse on corporate performance.

1.2 Significance of the Study

This research is significant as it addresses a gap in the literature regarding the performance of non-financial corporations in the Indian securities market. A thorough understanding of the factors influencing corporate performance is vital for a diverse group of stakeholders, including investors, corporate managers and policymakers. Insights derived from this study will enable these stakeholders to make more informed decisions. This leads to strategies that can enhance corporate performance and promote market stability.

Moreover, this study aims to provide a clearer understanding of how various influencing attributes contribute to corporate success. This understanding is crucial for the development of robust corporate strategies that can adapt to the dynamic market environment. Previous studies have highlighted the significance of these factors *(Akeem et al., 2014; Bandyopadhyay & Barua, 2016; Hamada, 1972; Henry Kimathi, 2015; Orlitzky, 2001; Welch, 2003)*. However, there is a need for a more comprehensive analysis that highlights the critical role of firm-specific attributes, sectoral variations and temporal dynamics in shaping corporate performance metrics, specifically focusing on non-financial corporations in India *(Agarwal & Banga, 2013; Kurtikto Wahyudi et al., 2023; K. Li et al., 2020; Tudose et al., 2022)*. By addressing this gap, the research will augment existing knowledge and provide practical implications for improving corporate governance and performance metrics.

Moreover, the findings of this study will have significant implications for policy formulation. Policymakers can use the insights to create frameworks that support corporate growth and financial stability. Understanding the key determinants of corporate success will also enable corporate managers to implement strategies that enhance operational efficiency and profitability, thus contributing to overall economic growth.

In essence, this research aims to provide a detailed and empirically grounded analysis of the factors that drive corporate performance in the Indian non-financial sector. By doing so, it will contribute to the development of effective corporate strategies and policies, thereby fostering a more robust and stable financial market. The study's findings will offer valuable guidance for stakeholders striving to enhance corporate performance and navigate the complexities of the Indian market.

1.3 Statement of the Problem

Corporate performance in the Indian non-financial sector is pivotal in driving economic growth and shaping investment decisions. While extensive data exists on performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE), the influence of key determinants, including firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age on these metrics remains insufficiently explored. Furthermore, existing literature frequently lacks a thorough framework that integrates these determinants with sectoral and temporal dimensions, especially within the context of India's dynamic economic landscape.

The post-2014 economic environment, characterised by significant reforms, regulatory shifts and global market transformations, adds further complexity to the relationships between firm-specific attributes and financial performance. Although this dynamic is important, it has not been sufficiently addressed in the current research. Scholars have emphasised the need for focused investigations that systematically examine these relationships within a unified framework. This is particularly important in the Indian context, where sectoral diversity and policy-driven economic changes significantly influence corporate outcomes.

This study aims to address these gaps by leveraging advanced statistical techniques like panel data regression analysis and temporal dummy variable. It examines the relationships between influencing factors and corporate performance metrics across ten major sectors from the Indian non-financial industry. Using a dataset from the CMIE Prowess database, which provides comprehensive and reliable financial information, the research ensures empirical rigour and contextual relevance. By

incorporating a temporal analysis that compares before and after 2014 periods, the study seeks to uncover the evolving dynamics of corporate performance in response to economic reforms and market transformations.

Moreover, the research incorporates key determinants, sector patterns and temporal segmentation to provide a better understanding of their combined effect on corporate performance. This multi-dimensional approach fills critical gaps in existing literature, offering valuable insights into the factors that drive efficiency, profitability and resilience across diverse industries in India.

The results of this research will significantly benefit corporate managers, policymakers, investors and academics. Since this study offering useful recommendations tailored to the Indian non-financial sector, it aims to enhance strategic decision-making and optimise corporate performance. Furthermore, it seeks to support policy development in a rapidly changing economic environment. This comprehensive framework will not only address current gaps but also serve as a foundation for future research in corporate performance analysis.

1.4 Scope of the Study

This research explores the corporate performance of leading non-financial corporations across ten key sectors, including Automobile, Fast Moving Consumer Goods (FMCG), Healthcare, Information Technology (IT), Media, Metals, Pharmaceuticals, Real Estate, Consumer Durables and Oil & Gas. The study focuses on the top 10 companies from each sector, ranked by their weightage in the Nifty index, to ensure a comprehensive and representative analysis of sector-specific dynamics (*About Indices, Stock Market Indexes – NSE India*, 2023).

The scope extends to a detailed investigation of key determinants hypothesised to influence financial performance. These attributes include firm size, capital structure, liquidity, asset tangibility, growth rate, business risk and firm age. The study further incorporates temporal segmentation, comparing the performance of these firms across two distinct periods, i.e., before 2014 (2010 - 2014) and after 2014 (2015 - 2023). This

segmentation provides a detailed understanding of how changes over time, including market dynamics and operational shifts, affect performance metrics.

Utilising a dataset sourced from the CMIE Prowess database, the research applies advanced econometric techniques, including Fixed and Random Effects Models, Panel Data Regression and Temporal Impact Analysis. By examining key performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE), the study identifies sectoral variations. It also unveils temporal trends and common points in performance determinants.

This research aims to provide practical insights for various stakeholders, such as corporate managers, investors and policymakers. These insights are intended to enhance strategic decision-making by identifying key factors driving financial success across sectors and periods. It also improves the understanding of corporate performance in the dynamic Indian context.

1.5 Research Questions

This study is designed to address several critical research questions aimed at uncovering the determinants of corporate performance among non-financial corporations in the Indian securities market. The key research questions guiding this investigation are:

1. What are the distributional characteristics (averages, variability, skewness and kurtosis) and the correlations of financial performance metrics (ROCE, ROA and ROE) with key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age among Indian non-financial companies?

2. How do key variables such as size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age influence financial performance metrics like ROCE, ROA and ROE?

3. What is the impact of key variables on financial performance metrics across different sectors?

4. How do temporal shifts before and after 2014 affect corporate performance metrics (ROCE, ROA and ROE) across various sectors in the Indian non-financial sector?

1.6 Objectives of the Study

The specific objectives of this study are as follows:

1. To analyse the distributional characteristics (averages, variability, skewness and kurtosis) and the correlations of financial performance metrics (ROCE, ROA and ROE) with key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age among Indian non-financial companies.

2. To evaluate the influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE).

3. To analyse the impact of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE) across different sectors.

4. To investigate the temporal impact on corporate performance metrics (ROCE, ROA and ROE) across sectors before and after 2014 and identify industries significantly affected by these shifts.

1.7 Research Hypotheses

Based on the objectives outlined, the study proposes the following research hypotheses:

1. Key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age exhibit distinct distributional characteristics (averages, variability, skewness and kurtosis) and significant correlations that reflect sectoral differences in financial performance metrics (ROCE, ROA and ROE) among Indian non-financial companies

2. Key factors (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) significantly influence the financial performance metrics (ROCE, ROA and ROE) of Indian non-financial corporations

3. The influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance metrics (ROCE, ROA and ROE) varies significantly across different sectors

4. Temporal shifts (pre-2014 vs. post-2014) significantly impact corporate performance metrics (ROCE, ROA and ROE) across sectors, affecting industries differently

1.8 Research Methodology

This study adopts a quantitative research methodology. It employs both descriptive and analytical designs to analyse the determinants of corporate performance among Indian non-financial corporations listed on the Nifty indices. This study examines two periods, 2010–2014 and 2015–2023, to highlight performance changes before and after the reforms.

The analysis is based on secondary data, primarily sourced from the CMIE Prowess database, supplemented by the annual reports and financial statements of the selected companies. The sample comprises the top 10 companies from each of the ten key sectors, selected based on their market capitalisation and economic significance, as published by Nifty Sectoral Indices. This judgmental or expert sampling ensures a representative view of sectoral diversity.

A strong methodological framework is used that incorporates multiple regression analysis and panel data regression to investigate the relationships between key variables. These variables include firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. The analysis focuses on corporate performance indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE).

Panel data techniques, including fixed and random effects models, are applied to account for both cross-sectional and temporal variations. Temporal dynamics are further explored using dummy variable to evaluate the impact of significant economic and regulatory reforms. By integrating these methods, the study achieves a nuanced understanding of sectoral and temporal patterns in corporate performance.

1.9 Tools for Analysis

This study uses advanced statistical tools to examine the relationships between influencing factors and corporate performance metrics (ROCE, ROA and ROE). Descriptive statistics summarise data distributions using measures such as mean, standard deviation, skewness and kurtosis, offering insights into central tendencies and variability across sectors. Correlation analysis evaluates the strength and direction of relationships between variables, while multiple regression analysis examines linear relationships and controls for confounding effects. Panel data regression incorporating fixed and random effects models, along with the Hausman test, to capture both cross-sectional and time-series variations. To ensure data stationarity, it incorporates panel unit root tests, including Levin-Lin-Chu, Im-Pesaran-Shin W-stat, ADF - Fisher Chi-square and PP - Fisher Chi-square. In addition, the White-Arellano estimator, a robust covariance estimator for panel data, is employed to account for cross-sectional heteroskedasticity and serial correlation. Dummy variable indicates different time phases, which helps in analysing the effects of changes over time. In addition, sectoral and temporal analysis reveals patterns across industries and periods, providing a deeper understanding of the effects of reforms and sector specific dynamics. This integrated framework provides a thorough and comprehensive analysis of the factors that influence corporate performance.

1.10. Definitions of Key Terms and Concepts

1.10.1 Firm Size: Refers to the stock market capitalisation, which is determined by multiplying the total number of common shares issued by the firm by the stock's closing market price. This measure reflects the scale at which a company operates and can influence various financial performance indicators.

1.10.2 Capital Structure: Denotes the composition of a company's financing, encompassing the proportion of debt versus equity utilised. It illustrates how a company funds its operations and growth, affecting its financial stability and performance.

*1.10.3 Liquidity***:** This study assesses liquidity using the Modified Turnover (MT) ratio. MT is the ratio of yearly trading volume to the product of total outstanding shares and earnings volatility, which is the absolute difference between the annual percentage change in Profit Before Interest and Taxes (PBIT) and its average over the sample period. This ratio captures trading activity and earnings stability, providing better insights into market liquidity and its effect on financial performance than traditional bid-ask spread metrics.

1.10.4 Tangibility: Refers to the ratio of a company's physical assets to its total assets. It indicates the extent to which a company's assets are in tangible form, such as property and machinery, compared to intangible assets, like patents and goodwill.

1.10.5 Growth Rate: The growth rate measures the percentage increase in a company's sales or revenue over a specified period, providing critical insights into its expansion and financial trajectory. It is calculated as the percentage change in sales from one period to the next, reflecting consumer demand trends and the effectiveness of strategic initiatives. A higher growth rate often correlates with increased market share and improved overall performance, making it a key indicator of corporate success.

1.10.6 Business Risk: Refers to the degree of variability in a company's earnings attributable to its operational activities. Higher business risk implies greater volatility in financial performance due to external and internal factors affecting the company's operations.

1.10.7 Firm Age: Indicates the length of time a company has been operational since its establishment. The age of a firm can influence its stability, market position and financial performance.

1.10.8 Industry Category: Industry category refers to the classification of firms into distinct sectors based on their primary business activities, enabling sector-specific performance analysis and the identification of industry-wide trends. This study includes the top 10 companies from each sector categorised under the Nifty indices, such as Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas. This approach aims to provide a comprehensive understanding of market dynamics.

1.11 Synoptic View of the Thesis

This thesis is systematically structured to provide an in-depth analysis of the factors influencing corporate performance within the Indian financial market. The organisation of the thesis includes the following key sections:

I. *Introduction:* Introduces the research by defining the study's objectives, significance and scope.

II. *Literature Review:* This section offers a comprehensive review of existing research, identifies gaps and establishes the theoretical foundation for the study.

III. *Corporate Performance Analysis: An Overview***:** This chapter explains the constructs and elaborates the theoretical models guiding the research, connecting key variables with performance metrics.

IV. *Materials and Methods:* This part describes the quantitative methods and analytical techniques used, including data sources and analytical tools.

V. *Results and Discussion:* This unit analyses collected data using various statistical methods. It then discusses the results within the context of the theoretical framework and existing literature, exploring their implications for theory and practice.

VI. *Summary, Findings and Conclusions:* This section summarises the key findings, along with actionable insights and recommendations for stakeholders such as investors, managers and policymakers.

VII. Recommendations: Based on the study's findings, this section suggests practical measures to enhance corporate performance and guide decision-making.

This structure ensures a thorough exploration of the determinants of corporate performance and presents a cohesive narrative from theoretical analysis to practical recommendations.

1.12 Chapter Summary

This chapter explains the foundation for the study by highlighting its key components and contextual framework. This section highlights the significance of analysing corporate performance within the Indian financial market and defines the scope of the study. It targets non-financial corporations across various sectors. It has posed central research questions and developed hypotheses to investigate the influence of key factors on corporate performance metrics. Also, the data collection and analysis methodology has been specified, including secondary data from the CMIE Prowess database and various analytical tools such as multiple regression and panel data regression. The chapter has provided definitions of key terms and concepts to ensure clarity and precision in the research. Finally, a comprehensive overview of the thesis has been provided, outlining the structure and progression of the following chapters, which sets the stage for a thorough analysis and discussion of the research findings in the subsequent sections.

Chapter II
Review of Literature

2.1 Introduction

The determinants of corporate performance have long been a focal point of research in the fields of commerce and management. It reflects their importance in shaping corporate strategies and influencing investor decisions. Several scholars have examined these determinants over the past few years, but are still searching for the intricate mechanisms that drive corporate performance. Their work emphasises the evolution of methodologies and the increasing complexity of models used to analyse financial performance. In their comprehensive review, they highlight that recent studies predominantly assess financial performance through accounting-based measures such as ROCE, ROA, ROE, ROS, ROI, EPS and NPM, alongside market-based measures reflecting company market value *(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020)*. These metrics create a strong framework for assessing corporate success. However, the variety of influencing factors ranging from company specific attributes, intellectual capital, innovation to corporate governance and macroeconomic elements demonstrates a complex array of influences that deserve further investigation.

The automotive industry serves as a prime example of sector-specific investigations into financial performance determinants. Panel data methodology was employed to analyse the financial performance of Romanian automotive companies, revealing distinct influences of variables like profit margin, profit growth rate and economic value added *(Tudose et al., 2022)*. Their findings highlight the complex relationship between various performance measures and factors, such as current ratio, capital gearing and company size. Similarly, an adaptive neuro-fuzzy model was utilised to predict stock prices in the UAE, identifying ROE and EPS as significant predictors while highlighting the varying impact of different profitability measures *(Mohamed*

et al., 2021). These sector-specific studies contribute valuable insights, yet they also point to the need for a more integrated approach that considers a broader array of factors across multiple industries.

In the context of the Indian equity market, the existing body of research reveals a significant gap in the comprehensive analysis of financial performance determinants. While individual factors like leverage, liquidity, firm size and age have been studied extensively, there is a paucity of research that integrates these variables within a unified framework across various sectors. This research aims to bridge this gap by examining the top companies across ten key sectors such as Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas, as reflected in their respective Nifty indices. By focusing on the combined impact of selected attributes and variables, this study seeks to provide a holistic understanding of the determinants of corporate performance. This comprehensive approach enhances analysis robustness and provides practical insights for investors, policymakers and corporate managers navigating India's complex financial market.

This study's theoretical framework investigates how internal and external factors shape corporate performance metrics like ROCE, ROA and ROE within non-financial corporations. It emphasises the roles of firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age, exploring each dimension's impact on financial outcomes. The framework also considers the sectoral dimensions, recognising their potential to alter the relationships between these variables and performance metrics. By integrating these elements, the research aims to offer a comprehensive understanding of the determinants driving corporate performance in the Indian equity market, laying a solid foundation for the subsequent analysis.

The earlier studies reviewed are presented in the following heads, viz.:

1. Corporate Performance Indicators
2. Key Influencing Factors of Corporate Performance
3. Bibliometric Analysis

2.2 Corporate Performance Indicators

Corporate performance indicators are essential for evaluating a company's financial health, operational efficiency and strategic effectiveness. These indicators provide insights into profitability, resource utilisation and serve as benchmarks for decision-making and performance analysis. They include key metrics such as ROCE, ROA and ROE.

2.2.1 ROCE, ROA and ROE

(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020) reviewed the progress in research on financial performance and its determinants. They found that financial performance is commonly assessed using accounting measures (e.g., ROA, ROE, ROI, EPS) and market value. ROA and ROE are the most frequent metrics. Key independent variables include capital structure, intellectual capital, innovation, corporate governance, organisational culture, macroeconomic factors and sustainability strategies. The study emphasised the need for a better understanding of corporate performance.

(*Tudose et al., 2022*) studied the determinants of financial performance in Romanian automotive companies using panel data analysis on data from 2010 to 2019. They analysed five performance measures (Profit Margin, Profit Growth Rate, ROE, ROA, EVA) and four explanatory variables (current ratio, capital gearing, turnover growth, company size). The research found that the determinants have distinct influences on performance measures and also found that the fourth-generation measure (EVA) is negatively influenced by the second-generation indicator (PGR) and third-generation indicator (ROA).

(*Rajkumar, 2014*) tried to measure the connection between financial leverage and financial performance in a premier diversified Sri Lankan company John Keells Holdings PLC, which focussed its operations in seven industry sectors. In this study, the financial leverage is surrogated to Debt Equity Ratio and Debt to Total Asset Ratio. The financial performance is proxied to Net Profit, ROE and Return on Capital Employed (ROCE). It is found that there is an adverse connection between financial

leverage and financial performance, but the former has a significant impact on the latter on the selected company.

(*Matar & Eneizan, 2018*) examined the factors that affect the financial performance of manufacturing industrial firms in Jordan. The study utilises financial statements of 23 industrial firms listed on the Amman Stock Exchange from 2005 to 2015. The dependent variable in the study is the firm's performance measure, return on assets (ROA). The independent variables include liquidity (LV), leverage (LQ), firm size (FS), profitability (PR) and revenues (RV). The findings indicate that liquidity, profitability and revenues have a positive relationship with return on assets (ROA), whereas leverage and firm size have a negative association with ROA.

(*Tabash et al., 2020*) examined the factors that influence the financial performance of Indian listed companies from 2010 to 2016. The study uses return on assets (ROA), return on equity (ROE), profit after tax (PAT) and earning per share (EPS) as proxies for financial performance of Indian firms. The study uses a fixed effects regression model to analyse a sample of 1598 companies listed on the Bombay Stock Exchange (BSE) in India. The results reveal that the leverage ratio, liquidity ratio, size of company and company age have a significant and positive influence on the financial performance of Indian listed companies.

2.3 Key Influencing Factors

Measuring firm performance is crucial for understanding a company's financial health and operational efficiency. The use of Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) as dependent variables allows for a comprehensive assessment of a firm's ability to generate profits relative to its size, capital structure, assets, growth rate, risk, liquidity and firm age. These metrics provide valuable insights into how effectively a company utilises its resources to create value for shareholders. By analysing these performance measures, stakeholders can make informed decisions regarding investments, management practices and strategic planning. Moreover, these indicators serve as benchmarks for comparing a firm's performance with industry standards or competitors, thereby highlighting areas for improvement or potential growth opportunities. Firm size, capital structure,

tangible assets, growth rate, business risk, liquidity and firm age may influence these performance indicators, making them viable independent variables in the analysis. The articles reviewed explore these factors, with corresponding objectives focused on understanding their impact on firm performance. These areas, including firm size, capital structure, tangible assets, growth rate, business risk, liquidity, firm age and others, will be discussed further to show their influence on financial performance. Accurate measurement of these variables is essential in corporate finance, as they directly influence investor confidence and the firm's market reputation.

2.3.1 Firm Size Impact

(Sudiyatno et al., 2020) examined the influence of profitability as an intervening variable on firm value among manufacturing firms listed on the Indonesia Stock Exchange. This study was performed from 2016 to 2018 and used panel data for multiple regression analysis. The Sobel test finds the mediating effect of profitability as an intervening variable in the connection between firm size and firm value. The research outcomes disclosed that managerial ownership and firm size had positively affected profitability, while capital structure did not affect profitability. The study also found that capital structure and administrative ownership harm firm value, while firm size and profitability positively affect firm value. This study confirmed that profitability is a mediating variable in intervening with the bond between firm size and firm value.

(AlGhusin, 2015) investigated the influence of the independent variables such as Financial Leverage, Fixed Asset / Total Assets Ratio, Company Growth and Firm Size on the dependent variable, i.e., Profitability, where the Return on Assets ratio (ROA) is its proxy. This study was conducted for ten years (from 1995-2005) and a sample of 25 listed industrial companies from the Amman Stock Exchange (ASE), Jordanian, was analysed. The investigation outcomes showed a significant effect of financial leverage and growth on industrial companies' profitability. This study recognises that industrial companies may enrich their profitability by undervaluing the debt and increasing financial assets compared with total assets. This research also identified that profitability and firm size are positively related but insignificant in Jordanian

industrial companies and the service sector. This research is confined to Jordanian industrial companies and the service sector only.

(Akinlo, 2012) analysed 66 firms in Nigeria to know the long-run connection and causality problems between profitability and firm size. This study adopted the panel data cointegration method and it was conducted for a period from 1999 to 2007. This study's observed outcomes showed a long-run steady-state connection between profitability and firm size and the short-run causal affinity implies a bidirectional association between profitability and firm size. Hence, Akinlo concluded the investigation by stating that profitability Granger causes firm size and firm size Granger causes profitability. This study clearly denies the general premise that most current analyses have been based on that causation runs only from firm size to profitability.

(Acheampong et al., 2014) investigated the connection between expected stock returns, financial leverage and market size of the firms in the manufacturing sector chosen from the Ghana Stock Exchange. In this study, the ordinary least square regression model and the Pearson correlation techniques were applied to identify the relationship between the dependent and independent variables. The study found a significant association between independent variables (i.e. leverage and firm size) and stock returns. When the overall industrial data is used, there is a negative and significant relationship between leverage and stock return. Yet, the relationship could have been more stable at the individual firm level. The study also found the relationship between size and stock market returns is positive and significant. The size influence within the manufacturing sector was, however, minimal.

(Odularu, 2009) analysed the impact of the sale of shares of a company on its performance. This study was conducted on confectionary companies listed on the Nigerian Stock Exchange (NSE). Twenty years' time series data were estimated. The Ordinary Least Square (OLS) technique was used, which possesses the unique property of the Best Linear Unbiased Estimator (BLUE). The variables under this study consist of Turnover, Profit after Tax, Price Index, Dividends and Market

Capitalisation. A good relationship is found between the companies' performance and their value in market capitalisation terms.

(Pratiwi, 2020) has studied the influence of capital structure, profitability and firm size on firm value. This study has been conducted on thirty-one companies listed on *the Indonesia Stock Exchange (IDX). It was conducted by considering the data between 2014 to 2018. M*ultiple linear regression technique has been used to analyse the data. The firm value is proxied with the market value of equity plus debt. Profitability, the company size and capital structure are proxied with Return on Assets (ROA), the total assets and the Debt-to-Equity Ratio (DER), respectively. It is found that capital structure and profitability influence firm value, whereas the companies' size does not influence firm value.

(Husna & Satria, 2019) conducted a study to determine the effect of different factors on firm value. To assess the firm value of the company, Return on Assets (ROA), Firm Size, Current Ratio (CR), Debt to Asset Ratio (DAR) and Dividend Payout Ratio (DPR) were used. ROA measures profitability, which shows how much assets contribute to creating net income. The research used a quantitative method to examine the relationship between independent variables (ROA, DAR, CR, firm size and DPR) and the dependent variable (firm value) of manufacturing firms listed on the Indonesia Stock Exchange. The study employed secondary data fetched from the authorised website of the Indonesia Stock Exchange and the population consisted of 138 manufacturing companies. Purposive sampling was used in this study to select 32 companies. Multiple regression examinations were employed to analyse the data. The results showed that ROA and firm size positively affected firm value, while DAR, CR and DPR did not have a significant effect. Moreover, all five financial ratios together significantly affected firm value.

(Khan, 2022) investigates the factors affecting the profitability of banks in GCC countries using data from 59 banks between 2011-2017. Return on Assets (ROA) and Return on Equity (ROE) are used as proxies of bank profitability, while bank size, capital adequacy, assets quality, deposits ratio, assets management, operational efficiency, financial risk, annual GDP growth and inflation rate are used as

explanatory variables. The final data set is an unbalanced panel data and panel data estimations were employed to find the effects of independent variables on dependent variables, including pooled OLS, random effects and fixed effects. The results showed a positive association between profitability and bank size, deposits, asset management, GDP growth rate and inflation. However, capital adequacy, asset quality, operating efficiency and financial risk had a negative and significant relationship with profitability. The study also found that larger banks have higher profitability and efficient asset management can lead to increased revenue. Finally, the study highlighted the insignificant relationship between deposits to asset ratio and profitability.

(Ali & Fatima, 2023) analyses the financial performance of Indian oil and gas firms, focusing on the impact of their size on relative financial measures. The study uses secondary data covering the financial years 2015-2022 and applies various financial ratios to measure the profitability, liquidity and solvency of the firms. The study finds significant differences in the relative financial performance measures of Indian oil and gas companies based on their size. The larger firms have higher relative financial performance, while the smaller firms have lower relative financial performance. Overall, the study suggests that the size of the firms affects their relative financial performance, with larger firms enjoying higher relative financial performance.

(T. N. Le et al., 2020) conducted a study on the profitability of construction companies listed on the Vietnam Stock Exchange. Their research investigated the impact of various factors on profitability, such as company age, debt ratio, growth rate, asset revolutions, company size and proportion of fixed assets. The study included seventy-three listed construction companies from 2008 to 2015. The research revealed that construction companies typically have a higher debt-to-equity ratio than other manufacturing companies. The study established six hypotheses on the impact of debt-to-equity ratio, fixed assets-to-total asset ratio, firm size, revenue growth rate, asset turnover ratio and firm age on profitability. The Pecking Order theory suggests that higher loans lead to lower profitability, while fixed assets and larger firm size positively impact profitability. Revenue growth rate and asset turnover ratio also

contribute positively to profitability. The study used different regression models to find the optimal model for the analysis.

(Fama et al., 1995) conducted a study in 1992 and found that market equity (ME) and the proportion of book equity to market equity (BE/ME) are two variables that capture much of the cross-section of average stock returns. The study confirms that portfolios constructed to mimic risk elements related to size and BE/ME add substantially to the deviation in stock returns explained by a market portfolio. The article examines whether stock prices properly reflect differences in the growth of profitability when stocks are grouped on size and BE/ME. The research suggests that the behavior of earnings/price ratios and stock returns means that the market makes unbiased earnings growth forecasts once stocks are allocated to portfolios based on size and BE/ME. The study also provides an interesting picture of how size and BE/ME relate to economic fundamentals.

(L. Li & Zhu, 2015) discusses the impact of family involvement and firm size on the performance of private-owned enterprises in China. The authors argue that family involvement has a special and important influence on the growth and development of Chinese private enterprises. However, the directions of the effects of family involvement on firm performance are diametrically opposite and the regulatory effect of organisational characteristics on that relationship is not well understood. To address this gap, the authors introduce the cognitive dimension of family intentions and the variable of enterprise scale. Their findings suggest that family intentions have a positive impact on firm performance and enterprise scale moderates the relationship between family involvement and firm performance.

(Andersen & Dejoy, 2011) investigates the role of control variables in moderating the relationship between corporate social performance (CSP) and corporate financial performance (CFP). The objective of this article is to provide additional clarity to understanding the corporate social/financial performance relationship. Factorial analysis of variance (ANOVA) is used here to establish the influence of CSP on financial performance and investigate how commonly used control variables affect that basic relationship. The study examines the impact of control variables such as

size, industry, risk and research and development expenditures on the relationship between CSP and CFP. The authors analyse separate measures for positive (strengths) social actions and negative (concerns) social actions. The best model that emerged from the study is one that includes size, industry, risk and research and development expenditures as control variables. The researchers concluded that in examining the CSP/CFP relationship, it is important to control for these variables to properly specify the model. The findings of the study support a positive relationship between CSP and CFP. The results suggest that control variables such as size, industry, risk and research and development expenditures play a significant role in moderating the relationship between CSP and CFP. Further research is needed to validate the study's conclusions over time.

(Dang et al., 2018) aims to comprehensively assess the sensitivity of empirical results in corporate finance to different measures of firm size. The authors hypothesise that the variation in size measures has significant implications for empirical results in corporate finance. To test this hypothesis, the authors examine the influences of employing different proxies of firm size on 20 prominent areas in empirical corporate finance research, including capital structure, mergers and acquisitions and more. The authors examine the sensitivity of empirical results to different measures of firm size by analysing the statistical significance of coefficients. They use various size measures such as total assets, total sales and market capitalisation as proxies for firm size. The authors analyse the coefficients of these variables and how they change when different size measures are used. The authors also find that the goodness of fit measured by R-squared varies with various size measures, suggesting that some measures are more relevant than others in different situations. Finally, the authors guide empirical corporate finance researchers who must use firm size measures in their work.

(Collis et al., 2007) examined the structure and staffing of over 600 corporate headquarters in Europe, the United States, Japan and Chile to determine the unique functions of corporate headquarters in diversified firms. The study explores the relationship between the size and structure of corporate headquarters and factors such

as the company's size, corporate strategy and governance system. The article's objective was to fill the gap in research on the appropriate size and roles of corporate headquarters in multi-business firms. It hypothesises that factors such as company size, corporate strategy and governance system are essential determinants of the size and structure of headquarters. The variables examined include the size and structure of headquarters, corporate strategy, staff and performance. The study's findings confirm that factors in each area examined are essential determinants of the size and structure of corporate headquarters. The conclusions drawn from the study highlight the importance of corporate headquarters in diversified firms and the need for further research on the appropriate size and roles of such entities.

(Fernández et al., 2019) aims to examine the relative importance of the firm and industry effects in explaining performance variations, while also studying medium-sized firms separately from SMEs in general. The authors hypothesise that the firm effect mainly explains the performance of large and small firms, while the performance of medium-sized firms is defined primarily by the industry effect. The methodology employed in the study involved empirically testing both effects, distinguishing the firms by size according to a standard classification in the EU. The data used for the study was collected from a sample of firms of different sizes operating in the Spanish economy. The study period spans from 2004 to 2012. The variables utilised in the study include firm size, firm effect, industry effect and organisational performance. The study found that the performances of large and small firms are mainly explained by the firm effect, albeit for different reasons. In contrast, the performance of medium-sized firms is explained primarily by the industry effect.

(Ho et al., 2019) aims to examine the relationship between firm size and corporate social performance (CSP) using a panel of 380 public companies in North America, Europe and Asia over six years. The authors identify the limitations in determining the relationship between firm size and CSP and use the Arellano-Bond method to control for the endogeneity in their research. The study hypothesises that firm size positively influences CSP and its subcomponents when endogeneity has been controlled for. The study's variables are corporate social responsibility, corporate

social performance, endogeneity and firm size. The data set used in this research is a panel of 380 public companies across 19 countries in North America, Europe and Asia over six years. The methodology used in the study is the Arellano-Bond method to control for the endogeneity problem between firm size and CSP. The authors use this method to examine the relationship between CSP and firm size. The study's findings indicate that firm size positively influences CSP and its subcomponents when endogeneity has been controlled for. The authors suggest that as firms grow in size, they can leverage their resources to achieve greater economies of scale that will lead to better CSP over time. The authors suggest that future research should continue to explore the relationship between firm size and CSP and address the potential endogeneity problem between these two variables.

(Tan et al., 2012) aims to examine the role of stock market capitalisation (SMC) in the process of financial integration in the Asia Pacific region. The hypothesis is that SMC can be used to identify which countries are acting as leaders in creating a fully integrated equity market in the area. The authors used a two-step procedure framework to analyse the data, which included 12 countries in the Asia Pacific region divided into "Emerging Market" and "Advanced Market" equity blocks. The variables examined were SMC, financial integration, cointegration, Granger causality and speed of adjustment. The findings suggest that the Hong Kong Special Administrative Region (SAR) possesses the necessary credentials to act as a market leader in financial integration in both the "Emerging Market" and "Advanced Market" equity blocks. The authors argue that a larger equity market (higher SMC) reflects a more mature and developed equity market, which is necessary to attract foreign equity market participants and achieve financial integration.

(Wincent, 2005) investigates the effects of firm size on firm behaviour and performance in strategic networks of small and medium-sized enterprises (SMEs). The study seeks to develop and empirically test a framework that explains how firm size can matter for firm behaviour and performance in SME networks. The study hypothesises that firm size can be an essential determinant of firm performance and networking behaviour inside and outside the SME network. The author argues that

larger firms can bind firms together in these networks and simultaneously prosper while doing so. The methodology used in the study is empirical, based on statistical examination of standardised questionnaires and face-to-face discussions with managers in a population of 54 firms operating in SME networks. The study analyses the networking behaviours of firms to determine how they impact corporate entrepreneurship and performance effects. The variables considered in the study are firm size, networking behaviour, corporate entrepreneurship and performance effects. The study's findings suggest that firm size is an important determinant of firm performance and networking behaviour in SME networks.

(Orlitzky, 2001) aims to examine the relationship between corporate social performance (CSP) and firm financial performance (FFP) while controlling for the potential confounding factor of firm size. The main hypothesis is that firm size may be a third factor that confounds the relationship between CSP and FFP. The methodology used in this study is a meta-analysis of more than two decades of research on CSP and FFP, firm size and CSP and firm size and FFP. The study integrates 41 different CSP-size correlations, combining this quantitative review with Gooding and Wagner's (1985) meta-analysis of the empirical relationship between firm size and FFP. The data used in this study are from various studies conducted within the last two decades. The study concludes that firm size is not a confounding factor that would distort the relationship between CSP and FFP. Even when firm size is controlled across studies (comprising, on average, over 15000 observations), CSP and FFP remain positively correlated, showing a "true-score" corrected path coefficient p of 0.37. The findings of this study support the growing evidence that CSP and FFP are positively correlated, at least under certain circumstances. It is important to note that the study is limited to the specific period being analysed and there may be other factors beyond firm size that could impact the relationship between CSP and FFP.

(Stanwick & Stanwick, 1998) aim to investigate the association between corporate social performance (CSP) and three organisational variables: organisational size, financial performance and environmental performance. The article critically reviews

the existing research base and builds on it by empirically testing data from 1987 to 1992. The study hypothesises that a firm's CSP is impacted by the size of the firm, the level of profitability of the firm and the amount of pollution emissions released by the firm. The study uses the Fortune Corporate Reputation Index to measure CSP and collects data on the organisational variables from annual reports, SEC filings and other publicly available sources. The study finds that a favourable relationship exists between CSP and financial performance and that this relationship is more pronounced for larger firms. The study also finds a negative relationship between CSP and pollution emissions, indicating that socially responsible firms tend to have lower pollution emissions. However, the study finds no significant relationship between CSP and organisational size.

(Zhou, 2000) aims to examine the executive compensation of Canadian firms between 1991-1995, which suggests that CEO pay rises with firm size and that compensation is tied to company performance. The study's hypothesis states that CEO pay will increase with firm size and be connected to company performance. The study also hypothesises that executives in utilities will earn lower incomes than their counterparts in other industries and that their compensation will be less responsive to performance. The study's methodology involves examining the compensation of 755 Canadian firms and analysing the relationship between CEO pay and firm size, company performance and industry type. The author employs regression analysis to test the hypotheses and define the relationship between the variables. The variables in the study include CEO pay, firm size, company performance, industry type, sales elasticity and CEO turnover probability. The study's findings suggest that CEO pay rises with firm size and that compensation is tied to company performance. The study also finds that executives in utilities earn lower income and their compensation is less responsive to performance than their counterparts in other industries. Also, the study documents some novel findings, including that the sales elasticity of CEO compensation is greater in larger firms and that the dismissal threat appears less pronounced in small firms.

2.3.2 Capital Structure Influence

(Salawu, 2009) examined the impact of capital structure on the profitability of Nigerian listed firms by analysing the related financial data of fifty non-financial companies for five years. This study used panel data estimation models consisting of Pooled Ordinary Least Square Model, Fixed Effect Model and Random Effect Model. Profitability was taken as the dependent variable and total Liabilities, long term debt, short term debt and equity were taken as independent variables to conduct this study. The result seems that profitability is positively correlated with equity and short-term debt, whereas the same is inversely correlated with long term debt. They also identified a negative association between profitability and total debt to total asset ratio. Even though the study identified a non-significant impact of capital structure on profitability, the same identified a positive relationship between short term debt and profitability. The data period for this study is concise, say five years only.

(Zeitun & Tian, 2014) analysed the impact of capital structure on corporate performance in Jordan. One hundred sixty-seven companies were selected and data for 15 years were analysed. Corporate performance is addressed in two ways: accounting performance and market performance. The accounting performance is measured through the variables such as ROA, ROE and ROI. The market performance is measured using variables like P/E, Market Value of Equity to Book Value of Equity (MBVR) and Tobin's Q. The capital structure is analysed through firm debt ratio and debt maturity ratios. Besides the relation between capital structure and corporate performance, this study also examined the impact of firm size, growth, risk, industrial sectors, tax and tangibility on corporate performance. It is identified that ROA and Tobin's Q are Jordan's most potent performance criteria. It is found that Short Term Debt to Total Assets has a significant positive impact on market performance measures.

(Ghosh, 2011) analysed the impact of leverage, prior dividend policy and profitability on the profitability of surge in the future value of selected companies in India. The study period was from 1989-90 to 2001-02. The fixed effect logit model has been used to predict the profitability of a surge in the future value. Market to book value ratio

(MBVR) has been taken as a dependent variable and Leverage Policy, Dividend Policy and Profitability have been taken as other variables in this study. The firm's total assets have been taken as a proxy variable and the private Indian and foreign standalone firms are fixed as dummy variables. It is identified that there is a non-linear relation between the selected variables with the future values. The author found that the increase in leverage and the firm's future value has an inverse relationship.

(Chen & Chen, 2011) endeavoured to identify the mediating effect of leverage on the impact of profitability on firm value by taking leverage as mediating variable. This research also tried to find the moderating effect of firm size and industry type on the impact of profitability on firm value. This study analysed 647 listed Taiwanese companies from 2005 to 2009. Here Leverage (debt-equity ratio and liability capitalisation ratio, i.e., ratio of liabilities to capital), Profitability (ROA) and Firm Value (Market value, i.e., per-share price at the end of the year), has taken as proxy variables. The industry type is taken as a classifying variable and firm size as a continuous variable. Sobel Test was laid to evaluate the mediating effect. It is found that even the leverage harms firm value, it has a moderator impact on the profitability of firm value. This study also found that the industry type and firm size work as moderator variables that mediate the association between profitability and leverage.

(Pinková, 2012) attempted to identify the factors affecting the capital structure of big and medium-sized firms in the Czech automotive industry. This study was conducted with data for the period from 2006 to 2010. Analysis of variance, Correlation and Regression has been undertaken to determine the relationship between variables. Financial leverage has been taken as the dependent variable, so total debt ratio, long term debt ratio and short term debt ratio have been calculated on a book value basis for the selected period. The influence of five independent variables, such as size, tangibility, profitability, liquidity and growth, on financial leverage has been analysed. Except for the variable growth, all four other variables significantly impact financial leverage in the Czech automotive industry.

(Bancel & Mittoo, 2002) explored the connection between theory and practice of capital structure, the authors conducted a survey among managers of seventeen

European firms on their perception of the determinants and choice of capital structure. The study was completed in 2002. Seven hundred thirty-seven firms from seventeen European countries were initially selected and the researchers finally chose 710 firms to conduct the survey. They collected data from CFOs through a questionnaire. The analysis found that financial flexibility, credit rating, the tax advantage of debt and interest rate level are the most influencing factor in the debt policy, whereas EPS dilution and share price are the primary concern for the issue of equity.

(Agarwal & Banga, 2013) argued that though the financing mix cannot affect the company's total earnings as they depend on investment decisions, it can affect earnings to ordinary shareholders. Hence whether and how capital structure (Debt-equity ratio) affects growth, size, profitability, business risk and non-debt tax has been examined. This study was conducted from 2002 to 2012. Multiple regression, ANOVA and t-test have been performed by taking leverage ratio as a dependent variable and growth, assets structure, profitability, debt service capacity, agency cost, company size, business risk, uniqueness, bankruptcy ratio and non-debt tax shield as independent variables. It is found that the asset structure is negatively related to leverage, whereas the growth, debt service capacity and tax shields are positively related to leverage.

(Drobetz, 2005) tried to identify various issues regarding capital structure from a Swiss point of view. The study was conducted by analysing an unbalanced panel data of 124 non-financial Swiss firms from 1991 to 2001. An empirical analysis of the impact of variables such as firm size, the tangibility of assets, profitability, the market-to-book ratio, volatility, uniqueness of the product and non-debt tax shields on leverage has been conducted. It is found that the firms have many investment opportunities that pertain with less leverage. They also found that the volatility of firms' earnings and the assets' tangibility has close relation with leverage. The leverage of Swiss public firms is comparatively lower compared to European firms and the same has been decreasing throughout the last years. This study suffers from fundamental econometrics imperfections.

(Sathyanarayana et al., 2017) examined the relationship between the identified determinants such as profitability, tangibility, growth rate, business risk and non-debt tax shield and financial leverage. The financial leverage is taken here as the dependent variable and all the other determinants are taken as independent variables. This study was conducted to know the impact on Capital Goods, FMCG, Infrastructure and IT Sector in the Indian Market. The data were collected for ten years, from 2006 to 2015, from the published financial statements and a linear multiple regression model was applied to analyse the stated objectives. To assess the strength of the constructed regression model, serial correlation test, heteroskedasticity test, normality test and CUSUM tests were conducted. It is found that Growth has a significant impact on all selected sectors except the IT sector. In addition to Growth, Earnings and Tangibility has considerable influence in the Capital Goods and FMCG sectors. The FMCG sector is also influenced by Size and the Non-Debt Tax Shield on its financial leverage, whereas Business Risk and Size are the other factors affecting the infrastructure sector. For the IT sector, Earnings, Business Risk and Size were the crucial factors in its financial leverage.

(Bhaduri, 2002) attempted to study the capital structure preferences of companies in Developing Countries through a case study with particular reference to the Indian scenario. This article forms a cost-of-adjustment model of capital structure. In order to address the measurement problem associated with the unobservable elements that affect capital structure determinations, the study uses the Factor Analytic method. They identified that optimal capital structure is influenced by elements such as size, growth, uniqueness, cash flow and industry attributes. The findings even document the presence of restructuring costs in achieving an optimal capital structure. However, the model developed exhibits solely a reasonable level of goodness of fit.

(S. Kumar et al., 2017) attempted to identify the status of different studies over the last forty years on capital structure determinants and tried to emphasise the significant gaps in the literature on capital structure determinants. Meta-analysis has been used to study the capital structure determinants relationship. This study was conducted by considering the 167 research papers published in the period between 1972 to 2013.

The year of publication and region, firm size, level of economic development, data collection methods, data examination techniques and theoretical models of capital structure have been evaluated from the chosen papers. One of the significant findings is that many research investigations are conducted on large-sized firms, whereas the studies on small-sized firms are remarkably meagre. This study also displays the pecking order theory's superiority in describing companies' capital structures.

(Titman & Wessels, 1988) conducted an empirical analysis on capital structure theory. Linear structural modelling has been adopted there. It examines the explanatory strength of some contemporary views of optimal capital structure. Asset structure, growth, non-debt tax shields, industry classification, uniqueness, earnings volatility, size and profitability are the attributes analysed in this investigation. It is found that firms with unique products have relatively low debt ratios and that smaller enterprises employ significantly more short-term debt than a more prominent firm. It also found no proof to support theoretical work that forecasts that debt ratios are connected to a firm's anticipated growth, volatility, non-debt tax shields, or the collateral worth of its assets.

(Degryse et al., 2012) inspect the influence of company and industry characteristics on the capital structure of small firms by using a proprietary database having financial reports of Dutch small and medium-sized firms from 2003 to 2005. The researchers examined Firm-specific attributes such as firm size, collateral, profitability, growth opportunities and industry characteristics as fixed effects in this study. A general static panel data regression model has been applied. It is identified that due to company characteristics, the capital structure decisions are compatible with the pecking order theory. The selected firms in this study are using earnings to lower their debt levels, whereas the growing firms, since they need more funds, boost their debt positions. It is also found that the increase in profits decreases the short terms debt; contrarily, the growth increases long-term debt in the capital structure.

(S. & C., 2021) conducted a study to explore the determinants of capital structure among Indian automobile manufacturing companies, employing panel regression analysis. The research examined factors influencing capital structure decisions using

Long-term Debt to Total Assets and Long-term Debt to Equity ratios. The findings revealed that variables such as firm size, profitability, tangibility, asset growth and interest coverage significantly and jointly impact the capital structure choices of these firms. This study highlights the complexity of capital structure decisions and the interplay of multiple quantifiable factors. It suggests essential wisdom for financial managers navigating these decisions in the auto manufacturing sector.

(Afza & Hussain, 2011) among the chosen manufacturing sectors examined the industry-specific characteristics of the capital structure of companies. This study was conducted in the Automobile, Electrical Goods and Engineering Sectors for the period 2003 to 2007 and the financial data was collected from the income statements and balance sheets. Spearman's correlation and Regression techniques were used to analyse data and the panel data Constant Coefficient Model was used. It is identified that the financing behaviour of firms in the Automobile, Engineering and Cable & Electrical Goods Sectors depends on the tax provision, liquidity, asset structure, size, non-debt tax shield and profitability of the firms. The research outcomes support the Pecking Order Theory and the Static Trade-off Theory.

(Nguyen & Tran, 2020) concentrated on construction companies and tried to examine the factors influencing the capital structure. The study period was from 2012 to 2019 and 54 companies from the selected sector were analysed. The panel data regression model has been used to analyse the impact of factors influencing the capital structure. Size, profitability, loan interest rate, coefficient of solvency, the structure of tangible assets and growth were taken as independent variables. It is found that the factors such as growth and firm size have a positive impact on capital structure, whereas the profitability element has an opposite effect. The factors such as average loan interest rate, short-term debt solvency and tangible asset structure bear no correlation with capital structure.

(Popli & Jaiswal, 2012) investigated among Indian firms whether and to what extent the main capital structure theories can explain their capital structure choices. The multiple regression models have been applied and the data were analysed on the chosen industries for a period from 2005 to 2011. The variables such as agency cost,

size, assets' structure and non-dept tax shield are considered for analysis and the dependent variable is taken as the debt-equity ratio. The data were gathered from 232 companies in 12 industries. It is pinpointed that the major variables deciding the capital structure of endeavours in India are assets' structure, agency cost, non-debt tax shield and size of the business.

(Hamada, 1972) sets several objectives. First, the article aims to link empirically corporate finance issues with portfolio and security analyses through the effect of a firm's leverage on the systematic risk of its common stock. Second, it attempts to test the Modigliani and Miller (MM) theory on the effect of corporate leverage. Finally, the article aims to demonstrate a method for estimating the cost of capital of individual firms for non-diversifying investment projects. The article hypothesises that a firm's debt-equity ratio increases the non-diversifiable risk of its stock, as measured by the covariance of the stock's rate of return with the market portfolio's rate of return. The variables in the article are the debt-equity ratio of the firm and the non-diversifiable risk of its common stock. The non-diversifiable risk is measured by the covariance of the stock's rate of return with the market portfolio's rate of return. The methodology used in the article involves estimating the non-diversifiable risk of individual firms using a systematic risk measure. The article also uses regression analysis to test the relationship between a firm's debt-equity ratio and its non-diversifiable risk. The findings of the article support the hypothesis that a firm's debt-equity ratio affects the non-diversifiable risk of its common stock. The regression analysis shows that the covariance of a stock's rate of return with the market portfolio's rate of return is positively related to the firm's debt-equity ratio. The article also finds that the MM theory is supported by the data. In conclusion, the article provides evidence that a firm's capital structure affects the systematic risk of its common stock.

(Kraus & Litzenberger, 1973) aims to introduce corporate taxes and bankruptcy penalties into a single-period valuation model in a complete capital market in order to determine the optimal debt-equity mix for the firm. The hypothesis of the article is that the firm's financing mix determines the states in which the firm will earn its debt obligation and receive the tax savings attributable to debt financing. The variables of

the study include market price of the primitive security, earnings before interest and taxes and financial leverage. The methodology employed in the study is a state-preference model in a complete capital market with the inclusion of corporate taxes and bankruptcy penalties. The findings of the study show that the total market value of the firm is not in general a concave function of financial leverage.

2.3.3 Liquidity Effects

(Sathyamoorthi et al., 2020) investigated the relationship between liquidity management and the financial performance of commercial banks in Botswana. The article hypothesises that there is a positive and significant connection between liquidity management and financial performance. This investigation is a quantitative approach using secondary data from financial statements of commercial banks in Botswana. The study used a sample of five commercial banks in Botswana covering the period between 2012 and 2016 to investigate the relationship between liquidity management and financial performance. The variables used in the study were liquidity ratios, profitability ratios and size of the bank. The study's findings exhibit that there is a positive and significant connection between liquidity management and financial performance, as estimated by return on assets and return on equity. The study also found that there is a positive relationship between bank size and financial performance. However, there is no significant relationship between liquidity management and bank size. The study concludes that liquidity management is an essential aspect of financial management in commercial banks and it has a positive effect on financial performance. The study's generalisability is confined due to the small sample size used in the study.

(Fang et al., 2008) investigated the relationship between stock market liquidity and firm performance, as well as to identify the cause of this relationship. The authors hypothesise that more liquid stocks will have better performance and that this relationship is driven by a feedback mechanism. The study used data on US public firms from 1988 to 2003 and employed statistical techniques such as regression analysis, instrumental variables and various controls to address potential endogeneity issues. They also use an exogenous shock due to decimalisation to identify the causal

effect of liquidity on firm performance. The main variables of interest in the study are stock market liquidity and firm performance, which are measured using a variety of proxies such as the market-to-book ratio, price-to-operating earnings ratio, leverage ratio and operating return on assets ratio. The authors also consider other variables that could confound the relationship between liquidity and performance, such as shareholder rights, momentum, idiosyncratic risk and business uncertainty. The authors find strong evidence that more liquid stocks have better performance as measured by the market-to-book ratio and that this relationship is driven by a feedback mechanism. They also find that high stock liquidity improves firm performance for all shareholder rights quintiles and that pay-for-performance sensitivity and stock-market liquidity are complements. Overall, the study represents a rigorous empirical investigation of the relationship between stock market liquidity and firm performance.

(Dalvi & Baghi, 2014) investigated the relationship between performance and liquidity of shares listed on the Tehran Stock Exchange. The paper aims to study the relationship between business performance and liquidity and to evaluate the theory of representation and feedback between performance scales and stock liquidity. The authors have used multiple regressions to evaluate and compare the results. The hypothesis of the study is that there is a positive relationship between liquidity and performance of the company. The authors have used two performance measures, return on assets and Q Tobin index, to study the relationship between performance and the company's liquidity. The authors believe that the Q Tobin index is better to use of market values because it is more suitable for studying the relationship between performance and the company's liquidity. The methodology used in the study is a combination of data from 154 companies listed on the Tehran Stock Exchange. The variables used in the study are business performance and liquidity of shares. The findings of the study show a strong correlation between liquidity and performance scales. The authors have also found that liquidity can be a positive influence on firm performance and leads to an improved performance and increased demand from shareholders in capital market transactions. The study concluded that there is a positive relationship between liquidity and performance of the company.

(Phuong et al., 2022) aimed to evaluate the relationship between liquidity, corporate governance and firm performance through a meta-analytic procedure. The authors provide a comprehensive literature review that outlines five theoretical frameworks that underpin the interlink between liquidity, governance and firm value. The theoretical frameworks include feedback theory, pay-performance sensitivity theory, activist exit theory, agency theory and resource dependence theory. The authors then proceed to describe the methodology used to test their research hypotheses. They conducted a meta-analysis of 48 studies published between 2000 and 2020 that investigated the relationship between liquidity, corporate governance and firm performance. The authors used a random-effects model to analyse the data and conducted meta-regression analysis to test for the impact of paper-characteristic factors on the relationships of interest. The variables in this study include liquidity, corporate governance and firm performance. The authors used various proxies to measure these variables, including bid-ask spread, turnover ratio, board size, CEO duality and return on assets. The authors also collected data from different countries, including the US, UK, China and India. The findings of this study suggest that there is a positive relationship between liquidity, corporate governance and firm performance. The authors report that firms with better liquidity strategies and stronger corporate governance mechanisms tend to have better financial performance. The authors also found that the pay-performance sensitivity theory is supported by the data, while the activist exit theory is not.

(Gu et al., 2018) investigated the relationship between stock liquidity and corporate diversification in the context of China's split share structure reform. The authors hypothesised that firms with higher stock liquidity are more likely to diversify their businesses due to improved financing conditions. To test their hypothesis, the authors employed a difference-in-differences methodology using a sample of Chinese listed firms from 2001 to 2010, where the treatment group consists of firms that underwent the split share structure reform. The authors also controlled for other factors such as financial constraints, agency problems and corporate governance mechanisms that might affect corporate diversification. The key variables used in the study are stock liquidity and corporate diversification, which were measured using different proxies.

The authors also collected data on other firm-level characteristics such as firm size, profitability and leverage. The period of analysis covers the pre- and post-reform periods, which allows the authors to compare the changes in corporate diversification between the treatment and control groups. The findings of the study suggest that there is a positive relationship between stock liquidity and corporate diversification. The authors argue that the improvement in financing conditions resulting from higher stock liquidity incentivises firms to invest in more diversified businesses. However, the authors also found that the positive effect of stock liquidity on corporate diversification is weaker for firms with higher financial constraints and stronger corporate governance mechanisms. In conclusion, the study provides empirical evidence that supports the hypothesis that firms with higher stock liquidity are more likely to diversify their businesses.

(Iovino & Migliaccio, 2019) investigated the differences or similarities in the financial performance of large energy companies versus small and medium-sized energy companies. The authors propose three hypotheses, namely, that small and medium-sized energy companies can achieve financial performance similar or higher than those achieved by large companies, that these results are due to the characteristics of small and medium-sized enterprises and new instruments available to them and that there are no statistically significant differences between the performances of large and small and medium-sized companies. The authors use histograms, descriptive statistics analysis and ANOVA to analyse the main financial and profitability ratios of the companies. The findings of the study suggest that small and medium-sized energy companies can achieve similar financial performance to large companies and there are no statistically significant differences between the performances of large and small and medium-sized companies. The authors attribute this to the characteristics of small and medium-sized enterprises and new instruments available to them. The study has important policy implications, particularly for small and medium-sized energy companies, which can benefit from the liberalised market and new instruments available to them.

(Tousek et al., 2021) aimed to identify factors that determine the profitability of trading companies (both publicly traded and unquoted private companies of all sizes) and to propose a model that adds to the competitiveness of companies. The article also seeks to prove a dichotomy between the motivation of equity holders and senior lenders in terms of acceptable financial leverage. The authors used panel regression analysis with fixed effects to assess determinants concerning the interests of shareholders and other stakeholders. The study analysed several factors influencing corporate profitability, including firm-specific effects, industry-specific effects and other macroeconomic effects. The authors found that the determinants of the operating performance of Czech trading companies differ substantially when the performance is measured by return on assets (ROA) or by return on equity (ROE), indicating discrepancies between the equity holder interest to maximise their returns on investment and the other stakeholder interests. The study identified several determinants of operating performance, such as capital intensity, labour cost ratio, historical profitability and macroeconomic variables, impacting both the ROA and ROE analyses. The leverage, both in terms of working capital and long-term financing, negatively impacts returns on assets but positively impacts returns for equity holders in the Wholesale and Retail sub-samples. The methodology employed in this study is robust and the authors used relevant theories and previous empirical research to define possible profitability factors in different categories of effects.

(Curry & Zul Fikri, 2022) examined the effect of capital structure, proxied by the debt-to-equity ratio, on the financial performance of companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange (IDX) from 2013 to 2019, while also considering the moderating effect of GDP. The study hypothesises that capital structure has a significant effect on financial performance, with a negative relationship between the two. Also, the study proposes that GDP moderates the relationship between capital structure and financial performance. The methodology used in the study is quantitative in nature, employing secondary data analysis. The sample consists of 22 companies in the food and beverage sub-sector listed on the IDX from 2013 to 2019. The study uses multiple regression analysis to test the hypotheses. The variables used in the study include capital structure, financial

performance (measured by return on assets), GDP, company size, tangibility and growth opportunities. The findings of the study indicate that capital structure has a significant negative effect on financial performance, supporting the hypothesis. However, the moderating effect of GDP on the relationship between capital structure and financial performance was not supported. Based on the findings, the study concludes that companies in the food and beverage sub-sector listed on the IDX should aim for an optimal capital structure to minimise the cost of capital and maximise firm value.

(Henry Kimathi, 2015) investigated the relationship between leverage and the performance of non-financial firms listed at the Nairobi Securities Exchange. The authors' hypothesis posits that the optimal capital structure maximises profitability and shareholder wealth and that firms that depend on debt as much as needed will enhance their performance. To test their hypothesis, the authors used a sample of 35 non-financial firms listed at the Nairobi Securities Exchange over a period of five years, from 2010 to 2014. They collected data on leverage, firm size, liquidity and financial performance measures such as return on assets (ROA) and return on equity (ROE). The study found that leverage has a negative effect on the financial performance of non-financial firms listed at the Nairobi Securities Exchange. The authors conclude that managers should emphasise on the optimum level of capital structure and efficient utilisation and allocation of resources in order to increase the company's financial performance based on capital structure.

(Fauzi & Musallam, 2015) examined the relationship between corporate ownership and company performance in Malaysian listed companies. The authors hypothesise that ownership concentration plays a significant role in the company performance of Malaysian listed companies. To test their hypothesis, the authors use a sample of 95 Malaysian listed companies and gather ownership structure data from annual reports for the period of 2008-2012. The authors employ multiple regression analysis to investigate the relationship between ownership concentration and company performance. The study finds a positive relationship between ownership concentration and company performance, which supports the authors' hypothesis. The authors also

find that government ownership has a negative effect on company performance. The research article provides a comprehensive analysis of the relationship between ownership concentration and company performance in Malaysian listed companies. The authors use a robust methodology and gather data from a substantial period. The findings provide insights for policymakers and investors on the importance of ownership structure in company performance.

(Alipour, 2013) analysed the relationship between ownership structure and corporate performance in the context of the Tehran Stock Exchange. The study hypothesised that ownership concentration and insider ownership would have a positive impact on corporate performance, while foreign ownership and institutional ownership would have a negative impact. The study utilised a quantitative research methodology, analysing data from a sample of 87 companies listed on the Tehran Stock Exchange for the period of 2004-2009. The study employed regression analysis to test the hypotheses and used financial ratios to measure corporate performance. The variables examined included ownership concentration, insider ownership, foreign ownership, institutional ownership and corporate performance. The study found that ownership concentration and insider ownership had a positive impact on corporate performance, while foreign ownership and institutional ownership had a negative impact. The study also found that ownership concentration had a greater impact on corporate performance than insider ownership. The findings of the study suggest that ownership structure plays an important role in determining corporate performance in the context of the Tehran Stock Exchange.

(Dawar, 2014) investigated the association between agency theory, capital structure and firm performance in the context of Indian companies. The hypothesis of the study is that there exists a significant relationship between the capital structure of firms and their performance and that this relationship can be explained by agency theory. The methodology of the study is quantitative and the data is collected from a sample of 50 Indian firms listed on the BSE-500 index. The study uses multiple regression analysis to test the hypothesis and control variables are used to account for any confounding factors. The variables used in the study include leverage, size, profitability, growth

and ownership structure. The data used in the study covers a period of five years from 2008 to 2012. The findings of the study reveal that there exists a significant relationship between capital structure and firm performance in the context of Indian companies. The study also finds support for the agency theory, as the results indicate that debt can be used as a tool to reduce agency costs and improve firm performance. The conclusions of the study suggest that managers of Indian firms should consider the impact of capital structure on firm performance and use debt as a tool to reduce agency costs.

The study by *(Ranjan Dutta et al., 2022)* investigates the impact of stock liquidity on the capital structure of the top 100 non-financial firms listed on the NSE from 2010-11 to 2019-20, utilising Amihud's illiquidity measure and a fixed-effect panel regression model. The findings reveal that stock illiquidity positively influences both book and market leverage, indicating that firms with less liquid stocks tend to have higher leverage, consistent with the pecking order theory which posits that debt financing is preferred for illiquid stocks due to lower sensitivity to adverse selection. Moreover, the study identifies negative relationships between leverage and both business size and return on assets, while asset tangibility positively affects leverage, supporting the notion that tangible assets can be used as collateral for debt. The results provide a nuanced understanding of capital structure determinants in the Indian context, emphasising the role of stock market liquidity alongside traditional factors such as firm size, profitability and asset tangibility.

(Sharma & Paul, 2015) investigated the relationship between stock liquidity and capital structure in the context of Indian firms. They challenge the prevailing concept that firms with more liquid stocks prefer equity financing due to lower issuance costs. Contrary to expectations, their findings reveal no significant connection between stock liquidity and leverage in the Indian market. This deviation from established literature is attributed to the unique characteristics of emerging markets, such as underdeveloped debt markets, concentrated ownership and high information asymmetry, which overshadow the influence of liquidity on capital structure decisions.

2.3.4 Tangibility Impact

(Margaritis & Psillaki, 2010) analysed the role of leverage in addressing agency conflicts within a firm. The study uses productive efficiency as a measure of (inverse) agency costs and examines the direct effect of leverage on firm performance as stipulated by the Jensen and Meckling (1976) agency cost model. The study also investigates whether firm efficiency has an effect on capital structure and whether this effect is similar or not across different capital structure choices. The authors discuss the limitations of traditional financial performance indicators as a measure of agency costs and argue that productive efficiency is a better proxy for agency costs, as it is not confounded by factors that may not be related to agency costs. The authors also discuss the competing hypotheses related to the effects of efficiency on capital structure and show how different principal-agent objectives, inadequate motivation and incomplete contracts become sources of (technical) inefficiency measured by the discrepancy between maximum potential output and the firm's actual output. The authors argue that ownership structure has a significant impact on corporate financing decisions and firm performance, as different types of owners may have different objectives and preferences. The authors argue that their study makes several contributions to the literature, including the use of productive efficiency as a measure of (inverse) agency costs, the examination of competing hypotheses related to the effects of efficiency on capital structure, the consideration of the association between ownership structure, capital structure and firm efficiency and the demonstration of how competing hypotheses may dominate each other at different segments of the leverage distribution.

(Fosu, 2013) discusses various theories that suggest a positive effect of leverage on performance, such as the trade-off between agency costs of debt and equity and the disciplining effect of debt. It also highlights possible negative effects, including underinvestment problems associated with debt and stakeholder reactions to leverage. The author then goes on to discuss the interaction effects of leverage and competition on firm performance, with a particular focus on South African companies. Using panel data consisting of 257 South African firms, the study finds a significant positive effect

of leverage on firm performance, with the interaction effect of leverage and competition on firm performance being positive. The paper also introduces a new measure of competition, the Boone indicator, which helps address potential setbacks in concentration indexes used in all previous studies. Overall, the article provides valuable insights into the relationship between capital structure and firm performance, particularly in the context of developing countries such as South Africa. However, it is worth noting that the study is based on a relatively small sample size and focuses on a specific geographical region, which may limit the generalisability of the findings to other contexts.

(Dada & Ghazali, 2016) explored the relationship between capital structure and firm performance in Nigeria. It discusses the importance of capital structure decision as the most significant decision made by any company and how it affects the market value of the firm involved. It also highlights the different theories that have emerged to explain a firm's choice of capital structure, including Modigliani & Miller theory, agency cost theory, trade-off theory and pecking order theory. The authors conducted empirical research to determine the effect which capital structure has on the Nigeria firm performance. The findings revealed that the capital structure of a firm has a significant effect on its financial performance. The study concluded that an optimal capital structure that balances the risks and returns of the firm is a crucial factor in maximising the market value of the firm.

(Riaz et al., 2022) studied all about capital structure and its importance in determining the performance of companies listed on the G-7 stock exchange. The paper also highlights the importance of debt in company performance. The author provides a balanced view on the relationship between debt and company performance, citing studies that find a positive, negative, or no relationship between the two. The research article uses a time-series panel data model to analyse the determinants of capital structure and the effects of capital structure on debt levels. The author has used generalised method of moments (GMM) to analyse the data and has provided a descriptive summary and correlation of the results. It is found that there exists a positive correlation between the level of debt and fixed assets, tangible assets, taxes,

net cash and profitability. The research article provides valuable insights into the determinants of capital structure and its impact on company performance. There is room for improvement in terms of the methodology used and the structure of the paper.

(Ganiyu et al., 2019) aims to examine the dynamic relationship between capital structure and firm performance of non-financial firms in Nigeria. The hypothesis of the study is that the optimal capital structure of Nigerian firms is dynamic and that a moderate use of debt financing positively affects firm performance while excessive use has a negative effect. The study uses agency cost theoretical model to analyse the relationship between capital structure and firm performance. The variables used in the study include capital structure which is measured by the debt-to-equity ratio, firm size, profitability which is measured by return on assets, growth opportunities which is measured by the ratio of market value to book value of assets and firm performance which is measured by Tobin's Q. The study uses a dynamic estimator to analyse the data collected from 50 non-financial firms listed on the Nigerian Stock Exchange over a period of 10 years (2006-2015). The study employs panel data regression analysis to examine the dynamic relationship between capital structure and firm performance. The findings of the study indicate that a moderate use of debt financing has a significant positive effect on firm performance while excessive use has a negative significant effect on firm performance. The study supports the agency cost theoretical model and suggests that the optimal capital structure of Nigerian firms is dynamic. The study concludes that firms in Nigeria should strive to maintain a moderate level of debt financing to enhance their performance.

(Bandyopadhyay & Barua, 2016) aims to study the interaction between capital structure, corporate performance and changes in macroeconomic conditions in India. It hypothesises that there exists a relationship between the capital structure choice of firms and their corporate performance and this relationship is affected by changes in macroeconomic conditions. The paper identifies several firm-specific factors that influence financial risk and debt-equity choice, including group affiliation, corporate governance pattern, size of the firm, its capital structure and business strategies. The

paper also identifies macroeconomic conditions as a factor that determines the capital structure choice of firms. The article's findings suggest that the optimal mix of long-term and short-term debt is determined by several factors, including the firm's credit standing, growth opportunities, profitability of the project, ability to fund the project from retained earnings or internal funds, the liquidation value of assets, the firm's size or age and managerial quality. The paper also finds strong evidence that macroeconomic conditions play a significant role in determining the capital structure choice of firms. The paper's findings suggest that there exists a relationship between the capital structure choice of firms and their corporate performance, which is affected by changes in macroeconomic conditions. Overall, the article is well-researched and provides a valuable contribution to the existing literature on the topic.

(Chadha & Sharma, 2015) aims to investigate the relationship between capital structure and firm performance in Indian firms. The article's hypothesis is that the optimal capital structure of a firm will maximise the market value of the firm. The article examines the variables of debt, common stock and preferred stock as components of the capital structure, as well as financial leverage as the ratio of debt and equity. The methodology used in this study is an empirical analysis based on a sample of 50 Indian firms listed on the Bombay Stock Exchange (BSE) for a period of five years from 2014 to 2018. The study employs regression analysis to examine the relationship between the capital structure and firm performance. The findings of the study suggest that a positive relationship exists between the capital structure and firm performance in the context of Indian firms. The study concludes that firms with an optimal capital structure have a higher market value than those with an inefficient capital structure. Overall, the article provides valuable insights into the capital structure and firm performance relationship in the Indian context. The study is limited to only 50 Indian firms and it excludes unlisted firms. The study does not consider the impact of macroeconomic factors on the capital structure of firms.

(Asaolu, 2021) aimed to investigate the relationship between capital structure and firm performance, as well as to compare the effects of capital structure on the oil & gas and manufacturing sectors in the United States. The article presented three hypotheses

to guide the study, which were: H01: Capital structure has no significant impact on performances of oil & gas and manufacturing sectors in the United States. H02: There is no linear relationship between capital structure and performances of oil & gas and manufacturing sectors the United States. H03: There is no difference between oil & gas and manufacturing sectors in the United States in terms of effects of capital structure on performance. The author argued that firms have to make choices between debt, equity or hybrid securities to maintain minimal cost and deliver maximum returns. The paper discussed the factors that firms consider while making financing decisions and the impact of such decisions on the firms' bottom-line. The study was conducted using data from the United States. The author used a sample of 100 companies in the oil & gas and manufacturing sectors. The variables used in the study included capital structure, firm performance, firm size, profitability, growth and tangibility. The methodology used in the study was multiple regression analysis, which was used to test the hypotheses. The findings of the study showed that there is a significant relationship between capital structure and firm performance. The study also found that there is a significant difference between the oil & gas and manufacturing sectors in terms of the effects of capital structure on performance. It concluded that capital structure has a significant impact on firm performance and that firms should carefully consider their financing decisions to achieve optimal performance.

(Khatoon & Hossain, 2017) explored the relationship between capital structure and firm performance in the developing capital market of Dhaka Stock Exchange (DSE). The article provided valuable insights into the cement industry in Bangladesh and its potential for growth. The authors used financial measurements such as return on investment (ROI), earning per share (EPS), dividend yield, price earnings ratio, growth in sales and market capitalisation to evaluate the financial performance of listed cement companies. The authors collected data from annual reports of 13 listed cement companies in the DSE over the period of 2005-2010. They used multiple regression analysis to examine the relationship between capital structure and financial performance. The independent variables included long-term debt, short-term debt and equity, while the dependent variables were ROI, EPS, dividend yield and market

capitalisation. The findings of the study revealed that there is a significant negative relationship between long-term debt and financial performance. In contrast, short-term debt and equity were found to have a positive impact on financial performance. The authors concluded that a firm's capital structure can affect its financial performance, particularly in the context of the cement industry in Bangladesh. They suggested that cement companies should maintain a balanced capital structure by carefully managing their debt and equity ratios.

(Ahmed & Bhuyan, 2020) aims to examine the relationship between debt financing and firm performance of service sector companies listed on the Australian Stock Exchange. The article highlights the changing configuration of the Australian economy from a resource-based economy to a service-based economy and the contribution of the service sector to the economy. The authors use four performance measures to capture firm performance, namely return on asset, return on equity, return on capital employed and operating margin. The authors review the Trade-off theory of capital structure, which argues that a firm's optimal leverage is achieved by minimising taxes, costs of financial distress and agency costs. The methodology used in the study is a panel data analysis of 64 service sector companies listed on the Australian Stock Exchange from 2014 to 2018. The authors use regression analysis to examine the relationship between debt financing and firm performance. The study finds that portability and leverage are positively associated, profitability and leverage are positively associated and no significant association between either return on equity and return on asset and long-term or total debt.

(Margaritis & Psillaki, 2007) aims to examine the relationship between a firm's capital structure and its productive efficiency. The authors use X-efficiency as a measure of firm performance and test the predictions of the agency cost hypothesis. The article has two main objectives. Firstly, it aims to consider the role of production and cost decisions in determining the extent of firm leverage. Secondly, it aims to assess the extent to which leverage acts as a disciplinary device in mitigating the agency costs of outside ownership and thereby contributes to an improvement in firm performance. The authors use a sample of 315 firms from the manufacturing sector in

Greece to test their hypotheses. They use a data envelopment analysis (DEA) to estimate the productive efficiency of the firms. The authors then use regression analysis to examine the relationship between productive efficiency and leverage. The findings of the study suggest that there is a negative relationship between productive efficiency and leverage, which is consistent with the franchise-value hypothesis. The authors find that more efficient firms may choose lower debt to equity ratios to protect the economic rents derived from higher efficiency from the possibility of liquidation. The authors also find that there is a positive relationship between leverage and total agency costs, which suggests that at high levels of leverage, the agency costs of outside debt may overcome those of outside equity.

(Vijayakumaran, 2018) analysed the performance effects of capital structure decisions for a sample of listed firms in China. The author argues that capital structure decisions are relevant to the value of firms and that they have a significant effect on corporate performance. The hypothesis is that greater debt financing may provide managers with the incentives to reduce agency costs through the threat of liquidation, which causes personal losses to managers in terms of salaries, reputation, perquisites, etc. and through pressure to generate cash flow to pay interest expenses. Debt financing is seen as a mechanism to constrain managers to spend corporate resources sensibly and thus enhance corporate performance shareholder value. The variables in the study are capital structure decisions, which include various financial instruments such as debt and equity and corporate performance, which is measured by the return on assets (ROA) and Tobin's Q. The study uses a panel data set of 1,420 firms over the period 2003 to 2013 and employs fixed effects and random effects models to estimate the impact of capital structure decisions on corporate performance. The findings of the study indicate that debt financing has a positive impact on corporate performance, as measured by ROA and Tobin's Q. The author suggests that debt financing can act as a disciplining device that constrains managers' misconduct and helps improve investment efficiency in both state-controlled and privately controlled firms. The conclusion of the study is that capital structure decisions are relevant to the value of firms and that debt financing can have a significant effect on corporate performance.

(Akeem et al., 2014) analysed the relationship between capital structure and the performance of manufacturing companies in Nigeria. The hypothesis of the study is that capital structure has a significant effect on the performance of manufacturing companies in Nigeria. The variables used in the study are capital structure, financial performance, leverage and profitability. The methodology used in the study involves a sample of 40 manufacturing companies in Nigeria and the data is collected from the annual reports and financial statements of these companies. The study uses regression analysis to examine the relationship between capital structure and financial performance, leverage and profitability. The findings of the study suggest that there is a significant negative relationship between leverage and profitability, while there is a positive relationship between capital structure and financial performance.

(Sahoo & Swain, 2022) examined the influence of intangible assets on the operational efficiency and market value of IT companies listed on the NSE-500. It highlights that, in the context of a digital and knowledge-based economy, intangible assets like goodwill, software, customer relationships and patents play a significant role in enhancing a firm's operational efficiency and market value. Previous research has largely focused on tangible assets, but recent studies underscore the importance of intangible assets in driving company performance, particularly in knowledge-based industries. This study fills a gap in the literature by using panel data techniques to analyse 27 IT firms over ten years, revealing that intangible assets collectively have a significant positive impact on both operational efficiency and market value, although individual intangible assets show varying levels of influence. The findings suggest that intangible assets are crucial for IT companies' competitiveness and performance, prompting further research to explore their broader implications across different sectors and incorporating additional variables.

2.3.5 Growth Rate Influence

(Mokhova & Zinecker, 2014) aimed to study the relationship between macroeconomic factors and the capital structure of firms. The hypothesis was that macroeconomic factors have a significant impact on the financing choices of companies and thus on their capital structure. The authors identified several key internal factors that affect

the financing choices of companies, such as profitability, asset tangibility, growth opportunities, non-debt tax shields and firm size. The authors also investigated how macroeconomic conditions influence corporate financial performance, with a specific focus on the impact of fiscal and monetary policies. The data used in the study were primarily secondary data from previous studies, as well as some theoretical models. The findings of the study suggest that macroeconomic factors do indeed have a significant impact on the capital structure of firms. The authors found that fiscal and monetary policies, as well as other macroeconomic conditions, can influence the financing choices of companies. However, the authors note that the relationship between macroeconomic factors and capital structure can vary depending on the specifics of each country and the debt structure of the firms. The conclusion of the study is that firms should consider both internal and external factors when making financing choices and adjusting their capital structure.

(Olokoyo, 2013) aims to study the effect of capital structure on the performance of Nigerian firms using panel data analysis. The research problem is to find out an optimum level of capital structure that can increase financial performance more efficiently and effectively. The author highlights that the bulk of empirical studies on this topic were conducted in advanced countries where the stock markets function quite adequately and very few studies have been conducted in the Nigerian context. The author discusses the Modigliani and Miller (1958) theory of capital structure and leverage and how they affect firms' performance. The author also highlights major hypotheses that include tax effects, signalling effects, bankruptcy effects, agency issues and industry effects. The author collected data from Nigerian firms' financial statements, which were obtained from the Nigerian Stock Exchange (NSE) and the annual reports of the companies. The data includes financial variables such as debt ratio, profitability and size of the firm. The period covered by the study is from 2000 to 2010. The findings from the estimation process show that there is a significant negative relationship between leverage and profitability, which supports the trade-off theory of capital structure. The study also found that size has a positive effect on profitability, suggesting that larger firms are more profitable. The author concludes

that Nigerian firms should carefully consider their capital structure decisions and avoid excessive amounts of debt financing.

(Ramli et al., 2019) investigated the relationship between capital structure determinants and firm financial performance, with a focus on the mediating effect of firm leverage. The authors hypothesised that firm-specific and country-specific attributes influence firm leverage, which in turn affects firm financial performance. The authors employed the APLS-SEM approach to analyse data from Malaysian and Indonesian firms between 2006 and 2015. The study's variables included capital structure determinants, firm financial performance and firm leverage. The data was obtained from the companies' annual reports and financial statements and analysed using various statistical tools. The study found that capital structure determinants such as asset growth, liquidity and firm size have a significant impact on firm leverage, which in turn affects firm financial performance. The authors also observed that the relationship between capital structure determinants and firm financial performance is partially mediated by firm leverage. The study's findings suggest that firms should consider their capital structure and leverage when making financial decisions to improve their financial performance.

(Abor, 2005) examined the relationship between capital structure and profitability of companies listed on the Ghana Stock Exchange during the period 1998-2002. The objective of the study was to investigate the impact of capital structure on firm profitability in Ghana. The hypothesis of the study is that there is a significant relationship between capital structure and firm profitability. The methodology used in the study is empirical analysis and the variables used are profitability, gearing and capital structure. The study uses secondary data obtained from the annual reports of listed firms in Ghana. The findings of the study indicate that there is a significant negative relationship between gearing and profitability, while capital structure has no significant impact on profitability. The study concludes that firms in Ghana should be cautious when using debt financing as it can negatively impact their profitability.

(Alfaro et al., 2019) investigated the relationship between corporate debt, firm size and financial fragility in emerging markets. The article hypothesises that large firms

in emerging markets are more financially fragile due to their high levels of corporate debt. The methodology used in the study is a cross-sectional analysis of firm-level data from emerging markets between 2007 and 2015. The study uses both descriptive statistics and regression analysis to analyse the data. The variables used in the study include corporate debt, firm size and financial fragility. The data used in the study is sourced from the Bank for International Settlements (BIS) and includes both domestic and foreign debt of emerging market-based non-financial firms and outstanding international bonds. The findings of the study suggest that large firms in emerging markets have higher levels of corporate debt, are more financially fragile and are more likely to experience liquidity problems. The study also finds that the growth in corporate profits has slowed considerably and the return on invested capital in emerging-market firms has significantly declined since the financial crisis. The article concludes that the rapid credit expansion in emerging markets has led to increased financial fragility among large firms and that monetary policy normalisation in advanced economies and rising emerging-market sovereign debt premia have the potential to cause severe liquidity problems for these firms.

(Saleh et al., 2017) aimed to examine the impact of the global financial crisis (GFC) on the financial performance of listed firms in Australia, with a particular focus on family-owned versus nonfamily firms. The authors also sought to investigate the differences in operations between these two types of companies before and during the GFC. The hypothesis of the study was that family firms would perform better than nonfamily firms during the GFC due to their unique ownership structures and decision-making processes. To achieve their objectives, the authors used a sample of listed firms in Australia and analysed their financial performance using various measures, including return on assets, return on equity and Tobin's Q. They also collected data on ownership structure and other firm-level variables. The study period covered the years 2006 to 2011, which included the onset and aftermath of the GFC. The authors used regression analysis to test their hypothesis and control for other factors that may affect firm performance, such as firm size and industry. The findings of the study suggested that family firms performed better than nonfamily firms during the GFC, as measured by return on assets and Tobin's Q. However, there was no

significant difference between the two types of firms in terms of return on equity. The authors concluded that the unique ownership structure and decision-making processes of family firms may have contributed to their better performance during the GFC.

(Chung et al., 2018) examined the target capital structures of firms through institutional monitoring. The study analysed the static trade-off theory of capital structure and its broader trade-off theories, which account for agency costs. The hypothesis was that a firm's target debt level is determined by a trade-off between the tax benefits of debt financing and the costs of potential financial distress and debt can be used as a disciplinary device to reduce the agency costs of free cash flow. The methodology used in the study was based on a dynamic setting, where firms actively adjust their debt levels to maintain certain debt ratios. The variables in the study included firm characteristics such as market capitalisation, growth opportunities, marginal tax rate and assets specificity, which were analysed to determine the corporate debt levels' dependence. The findings of the study supported the hypothesis, as the empirical evidence from previous studies suggested that corporate debt levels are dependent on firm characteristics. The study also found that firms actively adjust their debt levels to maintain certain debt ratios and bidding firms finance their acquisition strategically in accordance with significant changes in their capital structure.

(Samad, 2004) investigated the ownership structure, investment and financing decisions in the Malaysian corporate sector and how they relate to corporate governance. The hypothesis of the study is that corporate governance in Malaysia has been weakened by the concentrated ownership structure of its companies, government interventions, underdeveloped capital markets and weak legal and regulatory frameworks. The author argues that these factors contributed to poor investment decisions, excessive diversification of large business groups and exposure to debt, especially unhedged short-term foreign debt and risky financing practices. The methodology used in the study is a literature review of previous research on ownership and control, agency problems and corporate governance. The variables examined in the study include ownership concentration, investment and financing decisions,

shareholder monitoring and the protection of minority shareholders. The data used in the study were sourced from various published reports, including the recommendations of the high-level Finance Committee on Good Governance, Securities Commission and the Kuala Lumpur Stock Exchange (KLSE). The findings of the study suggest that ownership concentration is the most significant factor in shaping the corporate governance system of any country. The author argues that dispersed ownership leads to weak shareholder control due to inadequate shareholder monitoring, while concentrated ownership poses the challenge of protecting minority shareholders from expropriation. The study also found that weakened corporate governance in Malaysia was due to its concentrated ownership structure, government interventions, underdeveloped capital markets and weak legal and regulatory frameworks.

(Campbell & Rogers, 2018) focused on the period from 2006 to 2016 and examined companies based in the major markets of UK, Germany and France and also includes companies from the PIIGS (Portugal, Italy, Ireland, Greece and Spain) whose capital structures could potentially have been heavily affected by the Credit Crunch and Eurozone Crisis. The hypothesis of the study is that although the average debt ratios within countries generally did not change much, there were many companies which experienced substantial changes in their capital structure. The study aims to analyse what types of companies experienced the largest changes in debt levels and which had the highest volatility. The variables considered in the study were debt ratios, cash holdings, equity payouts, investments and other cash flow components. The study analysed the relationships between these variables to identify the factors that influenced the volatility in debt ratios. The findings of the study were that although the average debt ratios within countries generally did not change much, there were many companies which experienced substantial changes in their capital structure. The study found that small firms and those with lower returns on assets, experienced the most volatility. The study also found that the volatility of debt flows is partly determined by circumstance and that some companies prioritise debt stability and do not allow debt to fluctuate in response to changes in Cash from Operating and Investing activities (CFOI).

(J. Ooi, 1999) investigated the capital structure determinants of property companies in the UK. The study also aims to shed light on how property companies choose their capital structure and what factors influence their corporate financing behaviour. The hypothesis of the study is that the industrial classification is an important determinant of capital structure. The author also suggests that, contrary to the theoretical predictions of corporate finance literature, companies engaged in the property business are perceived by the market as benefiting from additional leverage. The methodology used in the study involves a review of the existing literature on capital structure models based on tax balancing and asymmetric information. The variables used in the study include the cost of the investment, size of its depreciation tax shield, expected costs of financial distress, market interest rates and the nature of the assets owned by an organisation. The findings of the study indicate that industrial classification is an important determinant of capital structure and companies engaged in the property business are perceived by the market as benefiting from additional leverage. The study also shows that the level of debt employed in a property acquisition is directly related to the cost of the investment and inversely to the size of its depreciation tax shield, expected costs of financial distress and market interest rates.

(Bae et al., 2019) aims to determine if corporate social responsibility (CSR) mitigates the negative effects of high leverage on product market performance. The authors hypothesise that CSR can reduce the adverse impact of high leverage by improving a firm's interactions with customers and competitors. To test their hypothesis, the authors use a sample of U.S. firms from 2002 to 2015 and employ a two-stage least squares regression analysis. The authors use market share as a proxy for product market performance and measure high leverage using the ratio of total debt to total assets. The authors also consider several control variables such as firm size, profitability and industry. The findings reveal that CSR reduces the adverse impact of high leverage on market share. Specifically, CSR helps highly leveraged firms retain customers and guard against rivals' predation. The authors also find that CSR has a greater impact on reducing market share losses for highly leveraged firms compared

to low leveraged firms. These results support the stakeholder value maximisation view of CSR.

2.3.6 Business Risk Impact

(Duasa et al., 2014) investigated the relationship between capital structure and performance of Islamic banks. The article hypothesises that there is a significant relationship between capital structure and performance of Islamic banks. The methodology used in the research article is a quantitative approach using panel data analysis for a sample of 35 Islamic banks in Malaysia and the Gulf Cooperation Council (GCC) countries for the period of 2007-2011. The article uses return on assets (ROA) and return on equity (ROE) as the performance indicators, while leverage, debt-to-equity ratio and debt-to-total assets ratio are used as the capital structure indicators. The data used in the research article is secondary data obtained from the banks' annual reports, Bankscope and other databases. The findings of the research article indicate that there is a negative relationship between leverage and performance of Islamic banks. However, the results also show that there is a positive relationship between debt-to-equity ratio and ROA and a negative relationship between debt-to-total assets ratio and ROE.

(T. P. V. Le & Phan, 2017) explored the relationship between capital structure and firm performance, focusing on the context of a small transition economy like Vietnam. In this article the authors turn their attention to the specific context of Vietnam, noting that prior to the Doi moi program in 1986, capital structure was not a major concern because most enterprises were state-owned and funded by the government. However, with the recognition of private sectors and the opening of the stock market in 2000, capital structure has become an important issue for managers in Vietnam. The authors note that Vietnam is still an emerging market that lacks sufficient financial instruments and supporting policies and guidance for firms to seek a suitable capital structure. To address this gap in the literature, the authors conduct an empirical study to examine the relationship between capital structure and firm performance in Vietnam. The authors use a sample of 218 firms listed on the Ho Chi Minh City Stock Exchange over the period from 2011 to 2015. The authors use panel data regression analysis to

test the relationship between capital structure (measured by debt-to-equity ratio) and firm performance (measured by return on assets). The authors find that there is a negative relationship between debt-to-equity ratio and return on assets, which suggests that firms in Vietnam may be over-leveraged. The authors also find that size, profitability and growth opportunities are important determinants of capital structure. The authors suggest that managers in Vietnam should pay attention to these factors when making decisions about capital structure.

(Bao & Gong, 2017) aims to investigate the relationship between leverage and returns using prospect theory and reference-dependence. The authors hypothesise that firms' capital structure decisions are affected by target leverage as well as observed leverage and the cost of financing varies based on market conditions. The methodology used in the study involves applying prospect theory and reference-dependence to the stock return model of Fama and French (1992) and applying the model in the Real Estate Investment Trust (REIT) sector. The study uses data from a sample of REITs in the U.S. from 1990 to 2013 and employs statistical analysis to test the hypotheses. The variables used in the study include leverage, returns, target leverage and observed leverage. The authors use data from a sample of REITs in the U.S. from 1990 to 2013 to test their hypotheses. The findings of the study show that firms' capital structure decisions are indeed affected by target leverage as well as observed leverage and the cost of financing varies based on market conditions. The study reconciles some puzzling results of leverage-return relationship by acknowledging reference-dependence and asymmetric risk preferences in firms' capital structure decisions.

(Welch, 2003) aims to investigate the relationship between ownership structure and corporate performance in Australian listed companies. The author hypothesises that ownership structure has a significant impact on corporate performance and seeks to provide evidence to support this hypothesis. The author uses a sample of Australian listed companies to test the relationship between ownership structure and corporate performance. The variables used in the study include ownership concentration, ownership dispersion and firm performance. The author employs different models to test the relationship between these variables and corporate performance. The findings

of the study suggest that ownership structure has a significant impact on corporate performance. The author finds a negative relationship between ownership concentration and firm performance, suggesting that as ownership concentration increases, firm performance decreases. In contrast, the author finds a positive relationship between ownership dispersion and firm performance, suggesting that as ownership dispersion increases, firm performance also increases. The study concludes that ownership structure plays a significant role in determining corporate performance in Australian listed companies. The study highlights the importance of accounting for the endogeneity of ownership structure when examining this relationship.

(Gama & Galvão, 2012) examined the impact of family ownership on firm performance, valuation and capital structure. The authors' primary objective is to analyse how family ownership, control and management affect a firm's performance, value and capital structure. The authors discussed whether family firms are different from non-family firms and how and why they are different. They defined a family firm as an organisation controlled and usually managed by multiple family members, often from multiple generations. The scope of their survey was related to public quoted firms controlled by a family. The authors used a survey methodology to collect data for their study. They collected data on 80 family-owned firms listed on the Lisbon Stock Exchange between 2005 and 2009. They analysed the data using multiple regression analysis and compared the results with non-family firms. The findings of the study showed that family firms have a positive impact on firm performance and valuation. The authors found that family firms have a higher Tobin's Q ratio and a higher return on assets than non-family firms. The authors also found that family firms have a lower leverage ratio and a lower cost of debt than non-family firms. Thus, their findings challenged the traditional capital structure literature, which suggests that firms should have a higher leverage ratio to minimise the cost of capital.

(Zeitun et al., 2017) investigated the effect of financial crises on the capital structure of firms in Gulf Cooperation Council (GCC) countries. The hypothesis of the study is that financial crises alter the dynamics of corporate capital structure and the traditional theories of capital structure may not be sufficient to explain the observed patterns of

leverage during these periods. The authors use a sample of 139 firms from GCC countries and employ a panel data regression analysis to investigate the relationship between leverage and various firm-specific and macroeconomic factors. The variables used in the study include leverage ratios, firm size, profitability, growth opportunities, tangibility of assets and macroeconomic factors such as GDP growth, inflation and interest rates. The data used in the study covers the period from 2005 to 2016 and includes the global financial crisis of 2008 and the oil price shock of 2014. The findings of the study suggest that financial crises have a significant effect on the capital structure of firms in GCC countries. During these periods, firms tend to rely more on debt financing to cope with the lack of internal resources, leading to an increase in leverage ratios. The traditional theories of capital structure are found to be partially relevant in explaining the observed patterns of leverage during financial crises, but additional factors such as liquidity constraints, market imperfections and institutional factors also play a significant role.

(Shyu, 2013) aims to investigate the impact of pyramid holding and cross-holding structures on agency problems, internal capital markets and performance of group-affiliated firms. The study also aims to determine whether group affiliation can benefit financially constrained firms. The hypothesis of the study is that the pyramid holding and cross-holding structures of business groups have significant effects on agency problems and it is possible to reduce such costs by creating an internal capital market within the group. The study also hypothesises that group affiliation can benefit firms undergoing cash-flow constraints. The methodology of the study is based on empirical analysis, which uses data from Taiwanese group-affiliated firms. The study employed a panel data analysis method, using a sample of 336 firms from 1995 to 2008. The variables considered in the study are ownership structure, capital structure, internal capital markets and performance. The study examines the relationship between these variables and the impact of pyramid holding and cross-holding structures on agency problems. The data used in the study are financial and accounting data obtained from the Taiwan Economic Journal (TEJ) database. The findings of the study suggest that the pyramid holding and cross-holding structures of business groups have a significant impact on agency problems in group-affiliated firms. The study also finds evidence of

an internal capital market within the group, which benefits financially constrained firms. The study further suggests that the performance of group-affiliated firms is positively associated with the use of internal capital markets.

(J. T. l. Ooi, 2000) aims to highlight the potential issue of managerial opportunism in the corporate governance of UK property companies. The hypothesis of the article is that the ownership structure of property companies has an influence on the security choices of property companies and that the debt-equity choice is influenced by company size and the condition of the security market. The methodology used in the article involves an exploratory study of the ownership structure of 83 property companies listed on the London Stock Exchange between 1989 and 1995 and an examination of 110 security issues made by UK property companies during the same period. The article uses logit regressions to test the hypothesis that the debt-equity choice of property companies is influenced by the ownership structure, company size and the condition of the security market. The findings of the article reveal that the ownership structure of property companies has an influence on the security choices of property companies. The empirical evidence also shows that the debt-equity choice of property companies is influenced, to a large extent, by company size and the condition of the security market.

(Detthamrong et al., 2017) aims to examine the relationship between corporate governance, capital structure and firm performance in Thailand and whether financial leverage mediates the relationship between corporate governance and firm performance. The authors hypothesise that financial leverage mediates the relationship between corporate governance and firm performance and that there is a positive relationship between corporate governance and firm performance. The study uses a sample of publicly listed firms in Thailand, operating under a one-tier board system. The authors collected data on corporate governance, financial leverage and firm performance for the period of 2008-2014. They then used regression analysis to test their hypotheses. The variables used in the study include corporate governance, financial leverage and firm performance. Corporate governance is measured using six variables, including board size, board independence, CEO duality, ownership

concentration, audit quality and institutional ownership. Financial leverage is measured by the ratio of total debt to total assets. Firm performance is measured using return on assets (ROA), Tobin's Q and market value. The study finds that there is a positive relationship between corporate governance and firm performance and that financial leverage partially mediates the relationship between corporate governance and firm performance. The authors also find that board independence and institutional ownership have a positive effect on financial leverage.

(Bokpin & Arko, 2009) aim to investigate the impact of ownership structure and corporate governance variables on the capital structure decisions of firms listed on the Ghana Stock Exchange. The researchers develop a hypothesis that ownership structure and corporate governance variables have a significant impact on the capital structure decisions of firms. They also suggest that the impact of these variables may differ depending on the insider system of corporate governance that is practiced in Ghana. The study employs a panel data analysis approach and uses data from 2002 to 2007. The variables used in the study include ownership structure, managerial share ownership, corporate governance indices and capital structure decisions. The data is obtained from the financial statements of 27 firms listed on the Ghana Stock Exchange. The study finds that ownership structure, as measured by institutional ownership, has a significant positive impact on the capital structure decisions of firms. However, the impact of managerial share ownership on capital structure decisions is found to be insignificant. The study also finds that a higher corporate governance index is associated with a lower level of debt financing, suggesting that better corporate governance practices lead to a more conservative capital structure. Overall, the study concludes that ownership structure and corporate governance variables have a significant impact on the capital structure decisions of firms on the Ghana Stock Exchange.

(Baek et al., 2016) aims to examine the impact of family ownership and management control on the capital structure decisions of small-cap public firms in the US. The hypothesis of the study is that family ownership and control affect the capital structure decisions of small firms. The authors argue that owning a firm's stock and managing

the firm are two different things and therefore, it is essential to distinguish the effect of family ownership from that of family management control. They hypothesise that family ownership is unrelated to debt ratios, but family control through the CEO position and recent stock performance moderates the effect of family ownership on capital structure decisions. The methodology of the study involves using a random effect panel regression for a stratified random sample of 200 US public firms in the Small-Cap index from 1999 to 2007. The authors use various control variables such as firm size, profitability, growth opportunities, tangibility and tax status. The authors define family ownership as the percentage of shares held by the founding family, while family management control is defined as the percentage of shares held by the founding family and the CEO position held by a family member. The data used in the study is from the S&P Small-Cap 600 index, which is underrepresented in prior research. The findings of the study suggest that family ownership is unrelated to debt ratios. However, family ownership is positively related to the market and book value debt ratios, but its effects are mitigated by family control of firm management and equity performance. The authors also find that potential ownership dilution is a factor in family owners' strategic decisions related to their firm's capital structure.

(Aluchna & Kaminski, 2017) aims to investigate the relationship between ownership structure and company performance in the post-transition, emerging Central European stock market of Poland. The article's hypothesis is that ownership structure has a systematic relationship with company performance. The authors use a panel model methodology, controlling for endogeneity and analyse the links between ownership structure and company performance measured by return on assets (ROA) on a sample of 495 Polish non-financial firms listed on the Warsaw Stock Exchange (WSE), covering the years 2005-2014 with a total of 3,203 observations. The authors find that the largest shareholder's stake has a positive effect on ROA, while the presence of multiple large shareholders has a negative impact. The study also suggests that the effect of ownership concentration on performance is nonlinear, indicating a threshold level of ownership concentration beyond which the positive effect of ownership concentration turns negative.

(Zhu & Jiao, 2013) aims to examine the efficiency of flat structure in an emerging market like China and to investigate the influence of internal capital market and internal managerial market within firms in capital allocation and corporate performance. The authors' hypothesis is that in less developed capital markets like China, where investors are relatively unskilled and inefficient at extracting information from profits, flat structure is better. They also argue that decentralised firms with small, single-manager are most likely to be attractive when information about projects is "soft" and cannot be credibly transmitted. In addition, the authors hypothesise that internal capital market and internal managerial market within firms have a positive influence on capital allocation and corporate performance. The methodology of the research article involves using data from Chinese listed corporations from 2001 to 2006. The authors use regression analysis to investigate the relationship between organisational structure and corporate performance and internal capital market and internal managerial market within firms in capital allocation and corporate performance. The findings of the research article suggest that flat structure is more efficient in less developed capital markets like China, where investors are relatively unskilled and inefficient at extracting information from profits. Also, it is found that decentralised firms with small, single-manager are most likely to be attractive when information about projects is "soft" and cannot be credibly transmitted. The study also provides positive evidence for the efficiency of internal capital market and internal managerial market within firms in capital allocation and corporate performance.

2.3.7 Firm Age and Firm Performance

(Loderer & Waelchli, 2010) investigated the relationship between profitability and a firm's age and found a strong negative correlation between the two. As companies grow older, these elements result in increased costs, reduced growth, outdated assets and deteriorating corporate governance. It centres on two main hypotheses: organisational rigidities and rent-seeking behaviour. Based on an empirical analysis of 10,930 firms over 82,845 firm years, this study provides important insights into corporate ageing, establishing a crucial framework linking declining efficiency and

governance quality to firm age. As well as filling gaps in existing literature, this research discusses governance dynamics and corporate lifecycles.

(Coad et al., 2018) examined the various effects of age on performance, demonstrating how it is more than just a straightforward control variable. They propose that firm ageing encompasses intricate, nonlinear impacts, primarily via liabilities associated with newness and senescence, in their critique of traditional personifications. It uses extensive literature reviews and empirical data to demonstrate how a firm's formative years play an important role in its survival and growth. Using comprehensive datasets, the authors recommend further research focusing on firm-specific factors and age, as well as differentiated economic outcomes from innovation outcomes. In different contexts, this study makes a significant contribution to understanding how age influences firm performance.

(Okunbo& & Oghuvwu, 2019) use learning theory to examine the influence of firm size and age on entrepreneurial performance. Based on analysis of data from 100 small and medium-sized enterprises, this study found that performance was positively and significantly correlated with variables. According to their results, older and bigger firms benefit from accumulated experience and economies of scale to enhance their performance. This study identifies limitations due to its reliance on primary data and suggests further investigations rely on secondary data sources. Emerging entrepreneurs need to network strategically in order to succeed, as this research emphasises the importance of firm-specific characteristics.

(Pervan et al., 2017) examine the impact of firm age on performance in the Croatian food sector using a dynamic panel analysis of 956 firms for ten years. Firm age negatively impacts profitability because firms become more rigid and less responsive to market fluctuations as they mature. The reason for this is bureaucratic inertia and declining innovation capacity, which outweigh the benefits of experience and a strong market position. The research also highlights the critical importance of size, liquidity and solvency, which play a significant role in firm performance. These findings will benefit managers looking to improve operational strategies and boost competitiveness in a changing market environment.

(Gunu & Adamade, 2015) use panel data to investigate the connection between firm age and financial performance in Nigeria's manufacturing sector. As firms age, their financial performance tends to decrease as measured by returns on invested capital, which indicates a negative association. This pattern is attributed to a number of factors, including rigid organisations, outdated resources and rising costs associated with aging, such as corporate governance. The investigation, despite these challenges, suggests that management strategies can be devised to mitigate the adverse impacts of aging and promote sustainable growth through resource renewal and innovation. Adaptive strategies are essential for enhancing long-term competitiveness in emerging markets, as highlighted by this study, which examines the interactions between firm age and performance.

(Rossi, 2016) reviews the literature on the effect of firm age on performance, emphasising the inconsistent results and fragmented nature of current research. Three key dimensions are explored in this paper: the relationship between firm age and organisational change, the effect on innovation performance and the correlation with financial results. Rossi suggests a cohesive theoretical framework, which is needed because some studies link firm age with accumulated experience and competitive advantages. In contrast, others emphasise organisational rigidity and reduced adaptability as firms age. Further studies are needed to integrate these diverse perspectives and comprehensively understand how age relates to firm performance. This research provides meaningful insights into the complex dynamics of firm age.

(Grund & Westergård-Nielsen, 2005) examined how workforce age structures affect firm performance, focusing on the relationship between average age, age diversity and value-added per employee. Based on Danish employer and employee data, the authors found that firms with moderately aged and moderately diverse employees performed better according to an inverted U-shaped association between both variables. It is attributed to a balance between youthful innovation and the experience of older employees, as well as optimal diversity that encourages productive collaboration and cohesion. In order to maximise firm efficiency, this research emphasises the

importance of strategically composing the workforce and invites for further research to confirm these conclusions in different industries and countries.

2.3.8 Miscellaneous Factors Analysis

Despite the extensive body of research covering a wide range of factors that influence firm performance, such as price-earnings ratios, share repurchases, disaggregate earnings and corporate financial architecture, this study narrows its focus to seven key independent variables: firm size, capital structure, tangible assets, growth rate, business risk, liquidity and firm age *(Pu, 2000), (Kurt, 2018), (Alam & Brown, 2006), (Ivashkovskaya & Stepanova, 2011)*. Prior studies have explored various dimensions of financial performance, including earnings, stock prices, board effectiveness, board size, financial news and risk management, each offering valuable insights into firm behaviour and market outcomes *(Alam & Brown, 2006; N. Kumar & Singh, 2013; Kurt, 2018; Mohammed & Knapkova, 2016; Pu, 2000; Seng & Yang, 2017; Switzer & Cao, 2011).*

(Garg & Tanwer, 2022) examined the influence of board variables on corporate performance before (2009 - 2013) and after (2014 - 2018) the enactment of the Companies Act of 2013, using data from Dollex-listed companies. Their regression analysis indicates that the presence of independent directors and CEO duality had a negative impact on accounting-based performance measures, specifically Return on Assets (ROA) and Return on Equity (ROE), following the reform. In contrast, the study found that the presence of female directors and the frequency of board meetings did not have a significant impact in either period. The researchers emphasise the need for organisations to improve their board practices and urge policymakers to reconsider governance regulations to enhance corporate performance more effectively.

(Goel, 2018) investigates the implications of corporate governance reforms on financial performance in India, analysing governance practices across two periods: FY 2012 - 13 (pre-reform) and FY 2015 - 16 (post-reform). Using a Corporate Governance Performance (CGP) index, the research highlights significant improvements in governance structures post-reform, though the number of

independent directors decreased. While governance reforms positively impacted financial performance in the earlier period, no significant financial linkages were observed in the later period. The study underscores the need for sector-specific reforms, stricter enforcement and enhanced corporate governance measures to align with financial performance objectives.

(Mikalef & Gupta, 2021) explores how organisations develop AI capabilities by leveraging tangible, human and intangible resources, grounded in resource-based theory. It provides empirical evidence that AI capabilities enhance organisational creativity and performance, offering a framework for measuring and maximising the strategic value of AI. However, these studies, while informative, address a diverse set of variables that may not fully capture the central drivers of financial success in the context of this research.

In identifying the most relevant variables for this study, the researcher recognises that firm performance is more likely to be influenced by the structural and operational aspects of the business, which are best represented by the selected seven independent variables. By limiting the scope of the study to firm size, capital structure, tangible assets, growth rate, business risk, liquidity and firm age, this research aims to provide a more focused and precise analysis of their impact on financial performance, as measured by ROCE, ROA and ROE. Although other variables, such as ownership structures, board size, etc., may also play a role, the seven chosen factors are deemed more relevant for understanding the current dynamics of corporate performance.

2.4 Bibliometric Analysis

Bibliometrics, an open-source tool, was used here with the latest version, i.e., RStudio 4.4.2, which facilitates comprehensive bibliometric analysis, including citation and network mapping, to examine the structure and evolution of research fields. Along with Biblioshiny, its web-based interface streamlines data analysis and visualisation, automating key stages of bibliographic evaluation. The bibliographic data for this study has been taken from the Scopus website and then processed and analysed in

RStudio. The analysis offered valuable insights into annual scientific production, the countries with the most citations, contributions to global research and associations among keywords, which highlights the key trends and patterns in the field.

The main details of the bibliometric dataset are summarised in Figure 2.1. The dataset highlights contributions from 1,370 authors who collectively published 489 documents, including 35 authored individually. The average citation count per document is 22.07, indicating the growing scholarly interest and significance of research in this field. Overall, the data reveals the dynamic, collaborative and multidisciplinary nature of scholarly work in corporate performance.

Figure 2.1

Summary Statistics of Documents Relating to Corporate Performance Analysis

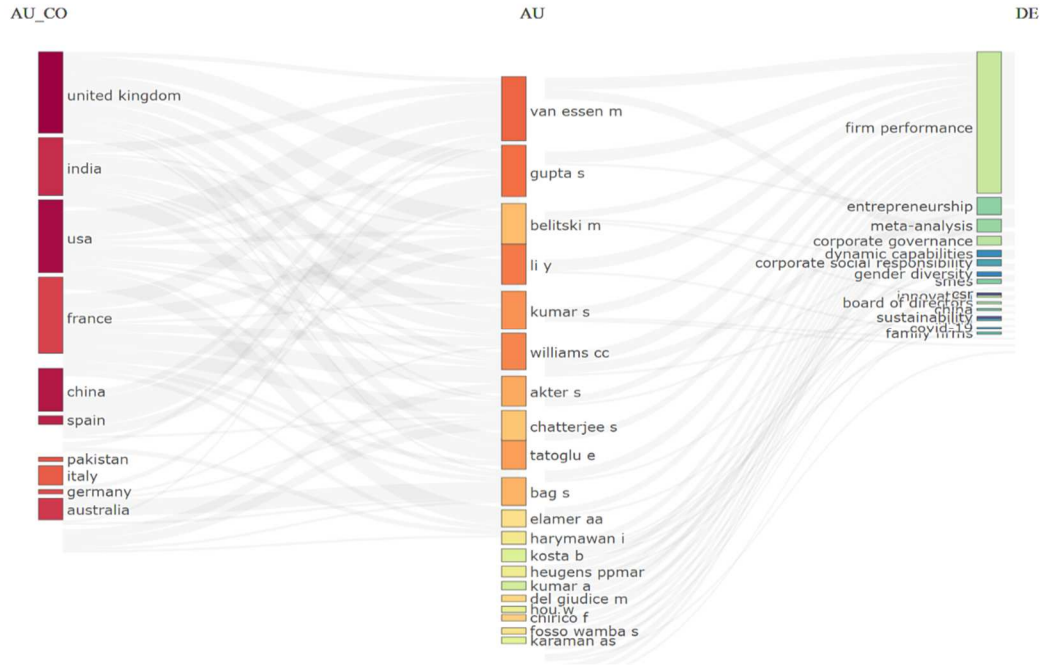
Source: Scopus Database

2.4.1 Countries, Authors and Keywords: A Three-Field Plot

The three-field plot, as shown in Fig 2.2, visually analyses the connections between contributing countries, key authors and research themes, highlighting geographic distribution, influential contributors and dominant topics. It offers insights into collaborative networks and the interdisciplinary nature of the research field.

Figure 2.2

Three Field Plot Consists of Countries, Authors and Key Words



Source: Scopus Database

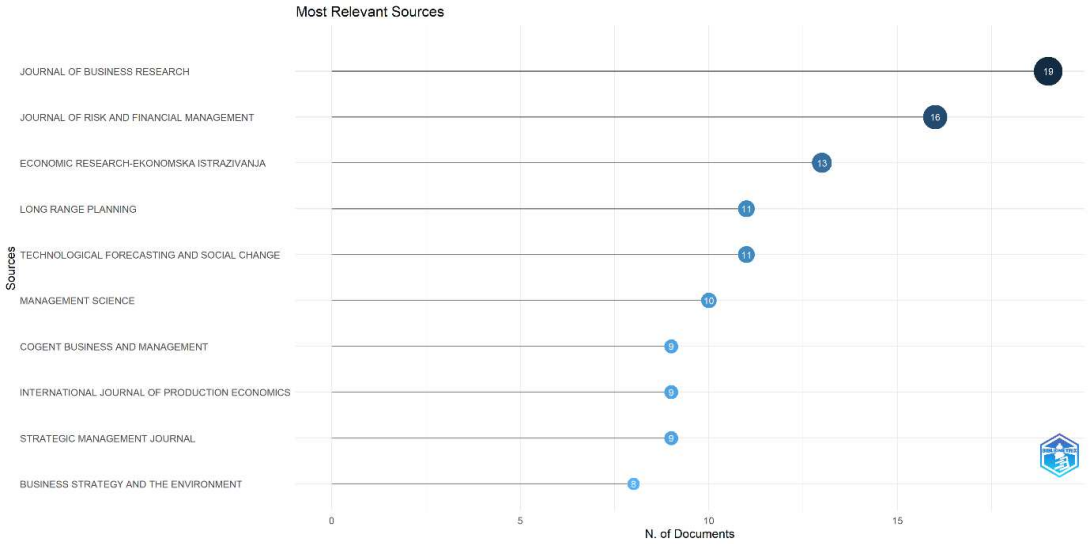
The above figure 2.2 illustrates a three-field plot connecting countries (AU_CO), authors (AU) and keywords (DE) within the bibliometric analysis. The leftmost section lists the top contributing countries, such as the United Kingdom, India and the USA, highlighting their significant role in the research domain. The central section identifies prominent authors showcasing their contributions, including Van Essen, Gupta S and Belitski M. The rightmost section displays key research themes, including firm performance, entrepreneurship, corporate governance and sustainability. The interconnections between these fields visually depict collaborative networks and thematic focus areas, emphasising the global and interdisciplinary nature of the research.

2.4.2 Top Contributing Journals and Publications

The following section highlights the most relevant sources contributing to corporate performance research, showcasing key journals such as the Journal of Business Research and Journal of Risk and Financial Management. This analysis provides insights into the leading platforms preferred by researchers and their academic impact.

Figure 2.3

The Most Relevant Sources



Source: Scopus Database

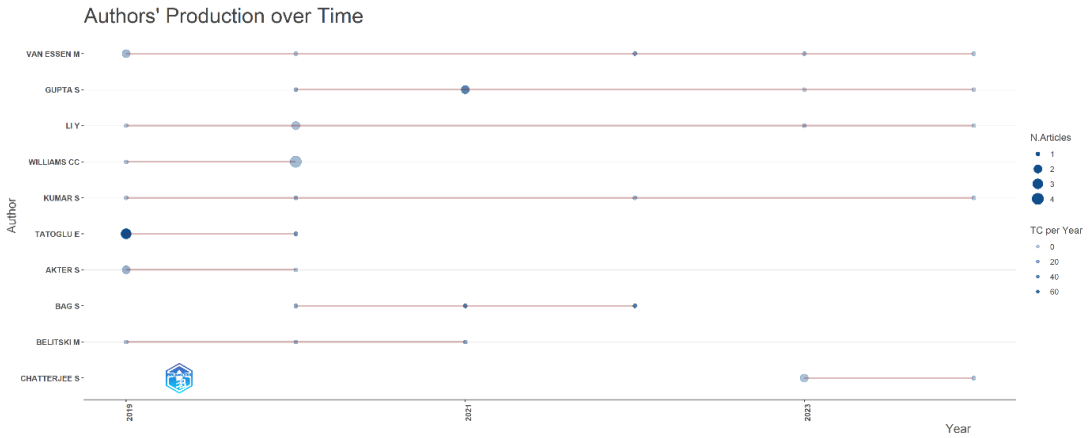
The above figure 2.3 highlights the most relevant sources contributing to the research domain of corporate performance analysis. The Journal of Business Research leads with 19 documents, followed by the Journal of Risk and Financial Management with 16 and Economic Research-Ekonomska Istraživanja with 13. Other notable sources include Long Range Planning and Technological Forecasting and Social Change, each with 11 documents. This visualisation emphasises the key journals and their significant contributions to advancing knowledge in this field.

2.4.3 Trends in Author Publications

The trends in authors' research contributions highlight the productivity and impact of key contributors such as Van Essen M and Gupta S. This visualisation highlights the consistency and influence of their work over multiple years, offering insights into evolving author productivity and citation patterns within the field.

Figure 2.4

Trends in Author Publications



Source: Scopus Database

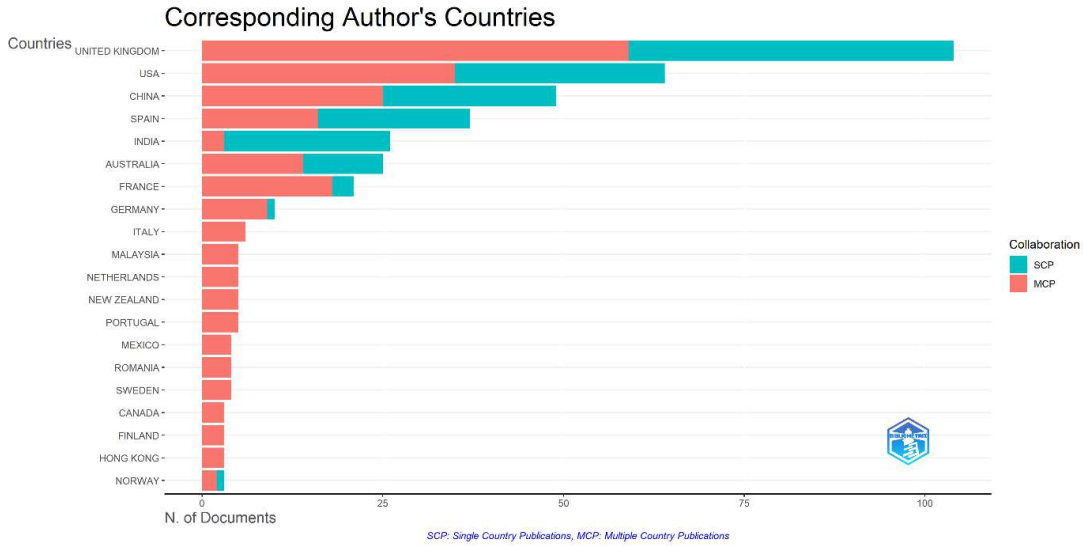
The above figure 2.4 illustrates the authors' research production over time, highlighting the publication trends of key contributors in the field. Authors such as Van Essen M, Gupta S, etc., exhibit consistent contributions over multiple years, indicating sustained research activity. The size of the nodes represents the number of articles published, while the colour intensity corresponds to the total citations (TC) per year. This visualisation provides insights into the temporal patterns of author productivity and the impact of their work, emphasising the prominence of certain authors in the domain.

2.4.4 Geographical Distribution of Research Contributions

The geographical distribution of research contributions, highlighting the countries with the highest output of corresponding authors. The United Kingdom, USA and China lead in document production, with notable activity also seen in Spain, India and Australia. This visualisation emphasises the significance of both single-country publications (SCP) and multi-country collaborations (MCP), reflecting the global and cooperative nature of research in this field.

Figure 2.5

Geographical Distribution of Research Contributions



Source: Scopus Database

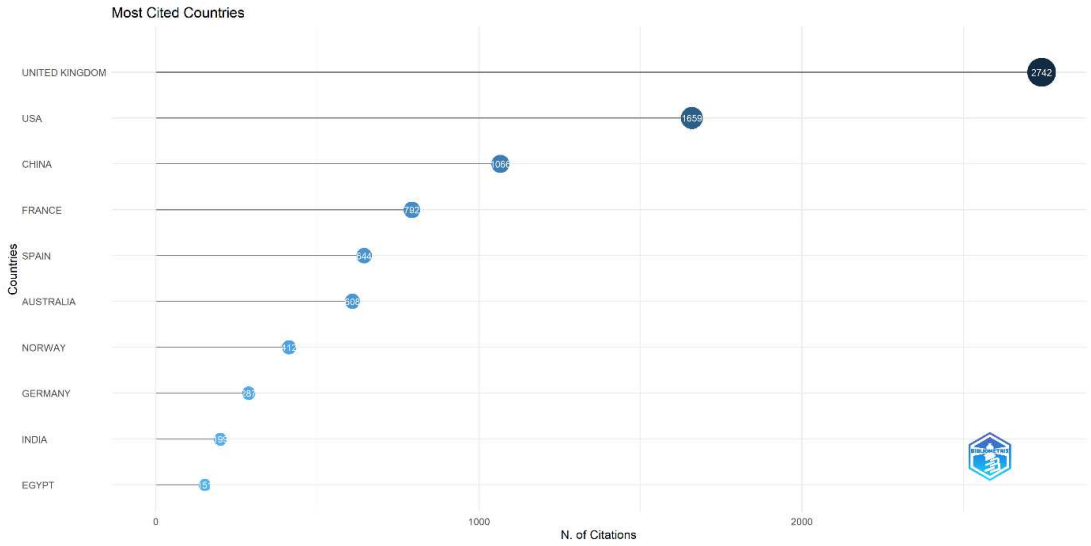
The above figure 2.5 depicts the distribution of corresponding authors by country, distinguishing between single-country publications (SCP) and multiple-country publications (MCP). The United Kingdom leads with the most documents, followed by the USA and China, showcasing significant contributions to the research domain. Countries like Spain, India and Australia also demonstrate notable activity, with a mix of both SCP and MCP collaborations. The chart highlights the dominance of international collaboration (MCP) in countries like the UK and the USA, reflecting the global and cooperative nature of research in this field.

2.4.5 Most Influential Countries in Research

The following section presents the countries with the highest citation counts in the research domain, reflecting the academic influence of their publications. The United Kingdom, USA and China dominate the list, with significant contributions also noted from France, Spain and Australia. This analysis highlights the global impact of research from these nations and their collaborative strength in advancing the field.

Figure 2.6

Most Influential Countries in Research



Source: Scopus Database

The figure 2.6 highlights the most cited countries in the research domain, indicating the academic influence of publications originating from each location. The United Kingdom leads with 2,742 citations, followed by the USA with 1,650 citations and China with 966 citations. Other notable contributors include France, Spain and Australia. The visualisation underscores the prominence of research from these countries and their significant impact on the field, reflecting their strong academic and collaborative output.

2.4.6 Treemap of Most Frequently Cited Keywords

The treemap visualises the most frequently cited keywords in the research field, emphasising key themes and their relative significance. Firm performance leads with the highest mentions, followed by other significant topics such as industrial performance, commerce and finance. Emerging themes like decision-making, sustainable development and supply chains also feature prominently, reflecting evolving research priorities and trends within the field.

Figure 2.7

Treemap of Most Frequently Cited Keywords

Source: Scopus Database

The figure 2.7 presents a treemap of the most frequently cited keywords in the research domain. Firm performance dominates the visualisation with 19% of mentions, followed by industrial performance (8%) and other prominent themes like commerce, finance and innovation each contributing around 3%. Keywords such as decision-making, sustainable development and supply chains also feature, highlighting emerging trends and areas of interest. This treemap effectively illustrates the diversity and relative prominence of topics within the field, providing insights into key research focuses and evolving themes.

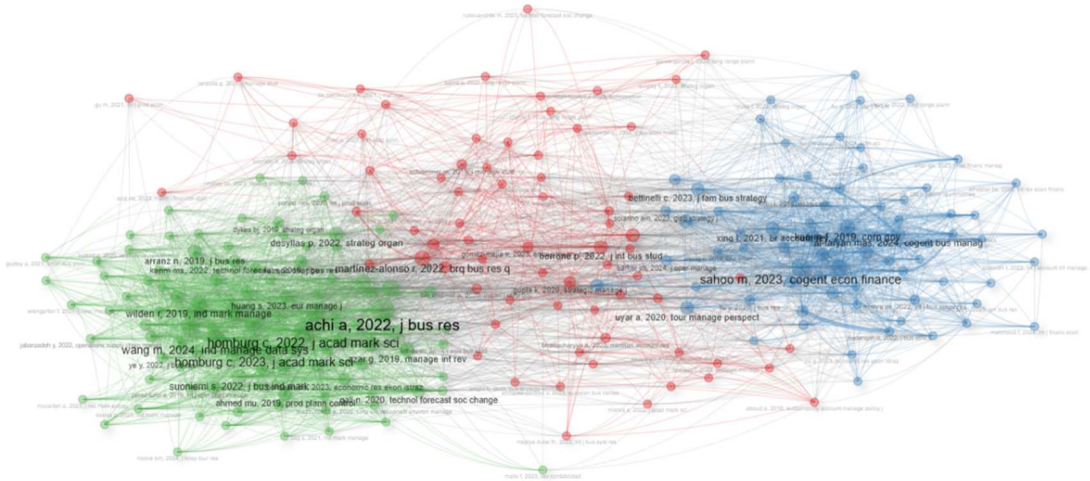
2.4.7 Bibliographic Coupling Network Analysis

A bibliographic coupling network visually represents clusters of research articles connected by shared citations. These clusters highlight thematic groupings or research communities with prominent areas of focus, including strategic management, corporate governance and economic performance. The map reveals the intellectual

structure of the field, emphasising key works and collaborative relationships that drive research development.

Figure 2.8

Bibliographic Coupling Network Analysis



Source: Scopus Database

The above figure 2.8 depicts a bibliographic coupling network, illustrating clusters of research articles based on shared citations. The nodes represent individual articles, while the links signify citation connections. The network is divided into distinct clusters, highlighted in green, red and blue, reflecting thematic groupings or research communities. Each cluster represents a specific area of focus, such as strategic management, corporate governance or economic performance. The density and size of the clusters indicate the degree of interconnectedness and influence within the domain. Prominent nodes suggest highly cited works that serve as key references, showcasing the intellectual structure and collaborative relationships in the field.

This bibliometric analysis provides a comprehensive overview of the research landscape in the domain of corporate performance. By utilising advanced tools such as Bibliometrix and Biblioshiny in RStudio, key insights were derived into the annual scientific production, influential authors, leading journals, geographical contributions and thematic trends. The findings emphasise the dynamic and collaborative nature of this research field, with a significant role played by international co-authorship and high-impact contributions from countries like the UK, USA and China. The analysis also highlights emerging research themes such as sustainability, decision-making and

supply chain management, showcasing the field's evolving priorities. Overall, this bibliometric study not only maps the intellectual structure of corporate performance research but also serves as a foundation for future investigations and collaborations in this area.

2.5 Research Gap

Despite extensive research on the determinants of financial performance in the Indian equity market, significant gaps persist. Many studies either focus on individual variables or are limited to specific sectors, leaving a gap in understanding the collective influence of influencing factors such as size, capital structure, liquidity, tangibility, growth rate, business risk and age across sectors. Moreover, existing research often needs to look more into the impact of these determinants on corporate performance indicators (ROE, ROA, ROCE) during significant economic and regulator transitions, such as pre-and post-2014 reforms. This study addresses these gaps by comprehensively analysing top companies in key sectors, including Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas, based on their Nifty index weightage. By incorporating sectoral influences and temporal factors, this research seeks to deliver a detailed understanding of the dynamics that affect financial performance, providing valuable insights for policymakers, managers and investors in the Indian securities market.

2.6 Chapter Summary

In conclusion, this literature review underscores the complexity and diversity of factors influencing financial performance, demonstrating the varied methodologies and contexts explored in existing research. However, there remains a need for a comprehensive analysis that integrates multiple attributes to understand their collective impact on corporate performance, particularly in the Indian equity market. By examining these determinants across top companies in key sectors, this study lays the groundwork for future research that can provide deeper insights and guide strategic decision-making. This holistic approach aims to enhance financial management practices and contribute to a more refined understanding of market dynamics in India's rapidly evolving economy.

Chapter III

Corporate Performance Analysis: An Overview

3.1 Introduction

This chapter examines the theoretical foundation of the study, the design of the conceptual framework and the development of hypotheses, all of which are based on a thorough literature review. It begins with an examination of the Indian economy and industrial sectors, setting the stage for understanding the broader context in which the study is situated. The chapter then explores theoretical perspectives on company attributes and their impact on organisational performance, clarifying two main methodological approaches: inductive and deductive. Next, it introduces accounting ratios such as ROCE, ROA and ROE as performance metrics and outlines the conceptual framework derived from the literature. It elaborates on key factors influencing financial performance, including firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. These factors are operationalised using suitable measures, including dummy variable for temporal effects, to assess their impact on corporate performance comprehensively. Furthermore, extraneous variables like corporate ownership structures, board size, financial news, etc., are considered to provide a holistic view. The chapter also formulates hypotheses based on the relationships between these factors and performance measures. The aim is to contribute significantly to the development of a theory of financial structure by investigating the structural relationships among various financial variables for non-financial corporations across different sectors within the Indian market. Finally, the chapter concludes with a summary, encapsulating the theoretical and methodological groundwork laid for the study.

3.2 Indian Corporate Sector

The Indian economy has undergone significant changes since 2000. The early 2000s experienced a focus on achieving economic self-sufficiency, rapid industrialisation and the creation of large state-owned enterprises. During the 1980s, there was an increased focus on connecting with the global economy, particularly through the encouragement of exports.

In the 1990s, external events such as the dissolution of the Soviet Bloc and the Iraq-Kuwait war resulted in a Balance-of-Payments (BoP) crisis occurring in 1991. Post-2014 reforms have revitalised the economy's potential for strong growth, establishing India as the fastest-growing nation in the G-20. These reforms, which followed the elimination of the intricate system of regulations, permissions and licenses in 1991, mark a pivotal "decade of transformative growth" since 2014, as outlined in the reviews segment that dissects India's growth narrative into two distinct phases: pre-2014 and post-2014.

India's GDP is expected to approach 7% growth in 2024-25 and could surpass 7% by 2030, with projections indicating an increase from $3.7 trillion this year to $5 trillion within three years and potentially $7 trillion by 2030. The economy saw an 8.4% GDP increase in Q3 FY24, driven by residential solid construction demand, with both manufacturing and service sectors growing, though private consumption growth remains modest at 3.6%. India's GDP growth surpasses major economies like Russia, the USA, China and Japan, yet the economic landscape remains complex and multi-faceted.

India's industrial sectors are categorised into primary, secondary and tertiary sectors, each playing a crucial role in the economy. The primary sector includes agriculture and mining, the secondary sector comprises manufacturing and construction and the tertiary sector encompasses services such as IT, telecommunications, banking, healthcare, tourism and hospitality. These sectors collectively drive growth, generate employment and contribute to socio-economic development in India.

NSE Indices Ltd. offers a detailed industry classification system for companies, enabling thorough sector and industry analysis. This system categorises companies into various distinct levels, allowing for effective comparisons. Each company is assigned a category based on the primary source of its business revenue (*Industry Classification*, 2023).

This study aims to analyse non-financial corporations within the Indian corporate sector by examining the top companies in each category according to their respective Nifty indices. It investigates key sectors such as Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas to provide a comprehensive understanding of corporate performance and sectoral dynamics *(About Indices, Stock Market Indexes – NSE India,* 2023). These sectors are vital to the Indian economy, reflecting diverse business activities and market behaviours. By selecting top companies based on their weightage in Nifty indices, the analysis captures the leading firms driving growth and innovation. This focused scrutiny allows for a detailed evaluation of non-financial corporations' contributions to economic development, offering insights into their operational efficiencies, market strategies and growth trajectories. The study highlights the relationship between business risk and corporate performance, emphasising the unique characteristics and contributions of these corporations within India's dynamic economic landscape.

The study uses performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) to evaluate corporate performance. It elaborates on key factors influencing corporate performance, including firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. These factors are operationalised using appropriate measures, including the use of dummy variable to distinguish between the time periods before and after 2014, to assess their impact comprehensively. Furthermore, extraneous variables like corporate ownership structures, board size, financial news, etc., are considered to provide a holistic view. This comprehensive analysis is conducted over two distinct periods: 2010-2014 and 2015-2023, which represent significant phases of economic transformation. By comparing pre- and post-reform impacts on selected companies

from the Indian stock markets, the study aims to understand the trajectory and effectiveness of corporate strategies and policies over time. This approach provides valuable insights into the structural changes and growth dynamics that have positioned Indian companies as competitive players in the global market and sets an optimistic tone for the future.

3.3 Financial and Non-financial Corporations in the Indian Corporate Sector

Financial Companies are institutions that provide financial services. They are involved in the business of loans and advances, acquisition of shares/stocks/bonds/ debentures/securities issued by Government or local authority or other marketable securities of a like nature, leasing, hire-purchase, insurance business and chit business. They can be further classified into two categories:

Banking Institutions or Depository Institutions: These comprise banks and credit unions that accept money from the public in exchange for interest on deposits and then lend it to those in need.

Non-banking Institutions or Non-depository Institutions: Insurance, mutual funds and brokerage firms are examples of non-banking institutions or non-depository institutions. Non-banking Financial Companies (NBFCs) are a type of non-banking institutions.

Non-financial Companies, on the other hand, operate in industries that do not primarily revolve around financial services. These companies are involved in a wide range of sectors, including manufacturing, technology, retail, healthcare and many others. They are often referred to as “real sector” or “non-bank” companies.

It’s important to note that the classification of a company as a financial or non-financial company is determined by its principal business activity. For instance, a company is considered to be conducting financial activity as its principal business when its financial assets constitute more than 50% of the total assets and income from financial assets constitute more than 50% of the gross income. This is popularly known as the 50-50 test.

This study focuses on non-financial companies within the Indian corporate sector, emphasising their role in diverse industries such as manufacturing, technology, retail, healthcare and more. Unlike financial companies, which primarily engage in financial services like loans, advances and securities, non-financial companies are integral to the "real sector" of the economy. The classification of these companies is based on their principal business activities, where their financial assets and income from financial activities do not exceed 50% of their total assets and gross income. By examining non-financial corporations, the study aims to provide insights into the operational efficiencies, market strategies and growth directions of firms that are pivotal to India's economic development.

3.4 NSE Sectoral Indices

As of September 30, 2024, NSE Indices Limited (formerly India Index Services & Products Limited) manages a portfolio of over 400 indices under the Nifty brand, including the Nifty 50. These Nifty indices serve as benchmarks for products traded on the NSE. By this date, 163 ETFs listed in India and 19 ETFs listed internationally use Nifty indices as their benchmark. Also, derivatives linked to Nifty indices are available for trading on both the NSE and NSE International Exchange IFSC Limited (NSE IX). *(Overview - NSE Indices, 2023)*

An index provides information about the price movements of products in financial, commodities and other markets. Financial indexes measure price changes in stocks, bonds, T-bills and other investments. Stock market indexes are designed to reflect the overall behaviour of equity markets. They are created by selecting a group of stocks that represent the entire market or a specific sector. An index is calculated based on a reference to a base period and a base index value.

Stock market indexes serve various important purposes, including:

- Comparing historical returns on stock market investments with other forms of investment, such as gold or bonds.
- Serving as a benchmark to compare the performance of equity funds.

- Acting as a leading indicator of the performance of the overall economy or specific sectors.
- Reflecting highly up-to-date information.
- Playing a crucial role in modern financial applications such as index funds, index futures and index options, which are important for financial investments and risk management. *(About Indices, Stock Market Indexes – NSE India, 2023)*

The National Stock Exchange (NSE) of India offers several sectoral indices that help measure the performance of specific segments of the stock market. Here are some of the key NSE sectoral indices, categorised into financial and non-financial:

3.4.1 Financial Sectoral Indices

1. *Nifty Bank Index*: Represents the banking sector and includes major banks and financial institutions.
2. *Nifty Financial Services Index*: Covers financial services companies, including insurance, NBFCs and other financial firms.
3. *Nifty Private Bank Index*: Includes private sector banks.
4. *Nifty PSU Bank Index*: Represents public sector banks.

3.4.2 Non-financial Sectoral Indices

1. *Nifty Auto Index*: Tracks the performance of automobile companies listed on the NSE.
2. *Nifty FMCG Index*: Monitors fast-moving consumer goods (FMCG) companies.
3. *Nifty Healthcare Index*: Includes pharmaceutical and healthcare-related companies.
4. *Nifty IT Index*: Tracks information technology companies.
5. *Nifty Media Index*: Represents media and entertainment companies.

6. *Nifty Metal Index*: Covers metal and mining companies.
7. *Nifty Pharma Index*: Focuses on pharmaceutical companies.
8. *Nifty Realty Index*: Monitors real estate companies.
9. *Nifty Consumer Durables Index*: Includes consumer durables and appliances manufacturers.
10. *Nifty Oil and Gas Index*: Covers oil and gas exploration, production and distribution companies.

These sectoral indices provide insights into the performance of specific industry segments within the broader stock market.

3.5 The Role of Non-financial Companies in Achieving Balanced Corporate Performance Analysis

Non-financial companies are included in the analysis because they offer diverse insights into market behaviour, economic health and investment potential that financial companies alone cannot provide. The asset structure of non-financial companies, typically dominated by tangible assets and operational investments, contrasts with the financial companies' focus on financial instruments and liquidity. This distinction allows for a more comprehensive evaluation of economic trends, firm performance and sector-specific performance. Focusing exclusively on non-financial companies provides a comprehensive perspective on real economic activities, allowing for a deeper understanding of market behaviour, sectoral trends and firm-specific attributes. This focus enhances the reliability and relevance of the research findings by aligning with the study's objective to analyse determinants of performance metrics within the non-financial sector in India.

3.6 Sector-wise Analysis of Non-financial Corporations

This study considers non-financial corporations across various sectors by examining the top companies in each category based on their respective Nifty indices. The sectors covered include Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty,

Consumer Durables and Oil & Gas. Each sector's top 10 companies, selected by weightage in their Nifty index, are scrutinised to reflect their behaviour and performance within the Indian financial market. This comprehensive analysis provides insights into the leading firms driving each sector's market dynamics.

3.6.1 Automobile Sector

The Nifty Auto Index is considered for selecting companies within the automobile industry. This index is crafted to mirror the behaviour and performance of the automobile segment within the financial market. It consists of 15 tradable, exchange-listed companies and encompasses sectors related to automobiles, including four-wheelers, two and three-wheelers, auto ancillaries and tires *(NIFTY Auto, 2023)*. The following 10 listed companies, which are the top constituents by weightage in the Nifty Auto Index, have been selected for analysis in this study:

1. Mahindra & Mahindra Ltd.
2. Tata Motors Ltd.
3. Maruti Suzuki India Ltd.
4. Bajaj Auto Ltd.
5. Eicher Motors Ltd.
6. Hero MotoCorp Ltd.
7. TVS Motor Company Ltd.
8. Bharat Forge Ltd.
9. Bosch Ltd.
10. Samvardhana Motherson International Ltd.

3.6.2 FMCG Sector

The Nifty FMCG Index is considered for selecting companies within the FMCG sector. This index is designed to reflect the behaviour and performance of fast-moving consumer goods (FMCGs), which are non-durable, mass consumption products readily available off the shelf. The Nifty FMCG Index comprises 15 stocks from the FMCG sector listed on the National Stock Exchange (NSE) *(NIFTY FMCG, 2023)*.

The following 10 listed companies, which are the top constituents by weightage in the Nifty FMCG Index, have been selected for analysis in this study:

1. ITC Ltd.
2. Hindustan Unilever Ltd.
3. Nestle India Ltd.
4. Varun Beverages Ltd.
5. Tata Consumer Products Ltd.
6. Britannia Industries Ltd.
7. Godrej Consumer Products Ltd.
8. Colgate Palmolive (India) Ltd.
9. United Spirits Ltd.
10. Dabur India Ltd.

3.6.3 Healthcare Sector

The Nifty Healthcare Index is utilised to select companies within the healthcare sector. This index is crafted to capture the behaviour and performance of healthcare companies. It includes up to 20 tradable, exchange-listed companies and is calculated using the free float market capitalisation method. This means the index level reflects the total free float market value of all its stocks in relation to a specific base market capitalisation value *(Nifty Healthcare Index, 2023)*.

The following 10 listed companies, which are the top constituents by weightage in the Nifty Healthcare Index, have been selected for analysis in this study:

1. Sun Pharmaceutical Industries Ltd.
2. Dr. Reddy's Laboratories Ltd.
3. Cipla Ltd.
4. Max Healthcare Institute Ltd.
5. Apollo Hospitals Enterprise Ltd.
6. Divi's Laboratories Ltd.
7. Lupin Ltd.
8. Aurobindo Pharma Ltd.

9. Alkem Laboratories Ltd.
10. Torrent Pharmaceuticals Ltd.

3.6.4 IT Sector

The Nifty IT Index is used to select companies within the IT sector. It reflects the performance of Indian IT companies and includes 10 companies listed on the National Stock Exchange (NSE). The index is calculated using the free float market capitalisation method, starting from a base date of January 1, 1996, with an initial base value of 1000. This value was later revised to 100 on May 28, 2004. The index level represents the total free float market value of all included stocks relative to a specified base market capitalisation (*NIFTY IT*, 2023).

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty IT Index, have been selected for analysis:

1. Infosys Ltd.
2. Tata Consultancy Services Ltd.
3. Tech Mahindra Ltd.
4. HCL Technologies Ltd.
5. Wipro Ltd.
6. LTIMindtree Ltd.
7. Persistent Systems Ltd.
8. Coforge Ltd.
9. MphasiS Ltd.
10. L&T Technology Services Ltd.

3.6.5 Media Sector

The Nifty Media Index is utilised for selecting companies within the media sector. It is designed to reflect the behaviour and performance of the media and entertainment industry, including printing and publishing. This index includes up to 15 stocks from the media and entertainment sector that are listed on the National Stock Exchange (NSE). It is calculated using the free float market capitalisation method, meaning the

index level represents the total free float market value of all included stocks relative to a specific base market capitalisation value *(NIFTY Media, 2023)*.

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Media Index, have been selected for analysis:

1. Zee Entertainment Enterprises Ltd.
2. PVR INOX Ltd.
3. Sun TV Network Ltd.
4. Saregama India Ltd
5. TV18 Broadcast Ltd.
6. Dish TV India Ltd.
7. Network18 Media & Investments Ltd.
8. Nazara Technologies Ltd.
9. Tips Industries Ltd.
10. Hathway Cable & Datacom Ltd.

3.6.6 Metal Sector

The Nifty Metal Index is used to select companies within the metals sector, including mining. This index is designed to reflect the behaviour and performance of the metals industry and comprises up to 15 stocks listed on the National Stock Exchange (NSE). It is calculated using the free float market capitalisation method, meaning the index level represents the total free float market value of all the stocks in the index relative to a specific base market capitalisation value *(NIFTY Metal, 2023)*.

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Metal Index, have been selected for analysis:

1. Tata Steel Ltd.
2. Hindalco Industries Ltd.
3. JSW Steel Ltd.
4. Adani Enterprises Ltd.
5. Vedanta Ltd.
6. Jindal Steel & Power Ltd.

7. NMDC Ltd.
8. APL Apollo Tubes Ltd.
9. Jindal Stainless Ltd.
10. Steel Authority of India Ltd.

3.6.7 Pharma Sector

The Nifty Pharma Index is employed for selecting companies within the healthcare sector, specifically focusing on the pharmaceutical industry. This index captures the performance of the pharmaceutical sector and includes 20 companies listed on the National Stock Exchange of India (NSE). It is calculated using the free float market capitalisation method, meaning the index level reflects the total free float market value of all stocks in the index relative to a specific base market capitalisation value. The Nifty Pharma Index serves various purposes, such as benchmarking fund portfolios and launching index funds, ETFs and structured products (*NIFTY Pharma*, 2023).

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Pharma Index, have been selected for analysis:

1. Sun Pharmaceutical Industries Ltd.
2. Dr. Reddy's Laboratories Ltd.
3. Cipla Ltd.
4. Divi's Laboratories Ltd.
5. Lupin Ltd.
6. Aurobindo Pharma Ltd.
7. Alkem Laboratories Ltd.
8. Torrent Pharmaceuticals Ltd.
9. Zydus Lifesciences Ltd.
10. Ipca Laboratories Ltd.

3.6.8 Realty Sector

The Nifty Realty Index is utilised for selecting companies within the real estate sector, aiming to capture the behaviour and performance of real estate companies. This index comprises 10 companies listed on the National Stock Exchange of India (NSE). It is

calculated using the free float market capitalisation method, where the index level reflects the total free float market value of all stocks in the index relative to a specific base market capitalisation value *(NIFTY Realty, 2023)*.

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Realty Index, have been selected for analysis:

1. DLF Ltd.
2. Macrotech Developers Ltd.
3. Godrej Properties Ltd.
4. Phoenix Mills Ltd.
5. Prestige Estates Projects Ltd.
6. Oberoi Realty Ltd.
7. Brigade Enterprises Ltd.
8. Sobha Ltd.
9. Mahindra Lifespace Developers Ltd.
10. Sunteck Realty Ltd.

3.6.9 Consumer Durables Sector

The Nifty Consumer Durables Index is utilised for selecting companies within the consumer durables industry, aiming to reflect their behaviour and performance. This index comprises a maximum of 15 tradable, exchange-listed companies. It is calculated using the free float market capitalisation method, where the index level reflects the total free float market value of all stocks in the index relative to a specific base market capitalisation value. The Nifty Consumer Durables Index serves various purposes, such as benchmarking fund portfolios and launching index funds, ETFs and structured products *(Nifty Consumer Durables Index, 2023)*.

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Consumer Durables Index, have been selected for analysis:

1. Titan Company Ltd.
2. Havells India Ltd.
3. Voltas Ltd.

4. Dixon Technologies (India) Ltd.
5. Century Plyboards (India) Ltd.
6. Blue Star Ltd.
7. Kajaria Ceramics Ltd.
8. Kalyan Jewellers India Ltd.
9. Bata India Ltd.
10. Amber Enterprises India Ltd.

3.6.10 Oil and Gas Sector

The Nifty Oil & Gas Index is employed for selecting companies within the oil, gas and petroleum industry, aiming to reflect their behaviour and performance. This index comprises a maximum of 15 tradable, exchange-listed companies. It is calculated using the free float market capitalisation method, where the index level reflects the total free float market value of all stocks in the index relative to a specific base market capitalisation value *(Nifty Oil and Gas Index, 2023)*.

For this study, the following 10 listed companies, which are the top constituents by weightage in the Nifty Oil & Gas Index, have been selected for analysis:

1. Reliance Industries Ltd.
2. Oil & Natural Gas Corporation Ltd.
3. Indian Oil Corporation Ltd.
4. Bharat Petroleum Corporation Ltd.
5. GAIL (India) Ltd.
6. Hindustan Petroleum Corporation Ltd.
7. Adani Total Gas Ltd.
8. Petronet LNG Ltd.
9. Oil India Ltd.
10. Indraprastha Gas Ltd.

This analysis offers a detailed overview of the leading non-financial corporations across diverse sectors in the Indian market, highlighting their significant contributions and market performance. By focusing on the top companies within each Nifty index,

this study provides valuable insights into the economic impact and competitive landscape of these key industries.

3.7 Corporate Performance Measures

The evaluation of corporate performance encompasses a spectrum of measures, spanning financial, personnel and marketing realms. Financial measures, including profit and loss statements, balance sheets and accounting ratios like return on investment, provide a quantitative snapshot of a company's fiscal health *(Brown & Laverick, 1994)*. Yet, they often overlook broader stakeholder concerns beyond shareholder interests.

Alternatively, personnel metrics such as job creation, employee productivity and research and development expenditure per employee offer insights into the internal dynamics of an organisation. Similarly, marketing indicators like sales volume and market share shed light on a company's competitive positioning.

Recognising the inadequacy of singular criteria for gauging corporate success, management scholars advocate for composite measures. These multifaceted evaluations consider various stakeholder objectives, acknowledging the diverse interests within and outside the organisation.

One such composite measure is the "balanced scorecard," pioneered by *(Kaplan & Norton, 1992)*. It integrates financial, operational, customer-centric and innovation-focused metrics, providing a holistic view of organisational performance. However, it primarily serves as an internal assessment tool, lacking broader applicability for cross-company comparisons.

An emerging approach gaining traction is the "informed spectator" method, endorsed by industry publications like The Economist and Fortune. This method relies on external evaluations, incorporating expert opinions and peer assessments to gauge corporate excellence. Such assessments reflect a company's ability to reconcile the competing demands of stakeholders, positioning it as both high-performing and highly admired.

Drawing on seminal works by management theorists like *(Cyert & March, 1963, Simon & Barnard, 1969, Chakravarthy, 1986)*, the quest for a comprehensive performance measure underscores the complex interplay of organisational objectives and stakeholder interests. By adopting a comprehensive framework that goes beyond financial metrics, researchers and practitioners can more effectively capture the complex dynamics of corporate performance in today's business environment.

3.8 Corporate Performance - Key Financial Metrics

In assessing a firm's overall financial health and performance, various metrics provide insights into profitability, efficiency and financial stability. This section evaluates and ranks these metrics based on their significance, offering a comprehensive understanding of a firm's operational and financial effectiveness.

*3.8.1 Return on Equity (ROE)***:** ROE measures the profitability relative to shareholders' equity. A high ROE indicates efficient use of equity to generate profits, making it a primary indicator of financial performance *(Kassi et al., 2019; K. Li et al., 2020; Mihaela Brindusa Tudose & Silvia Avasilcai, 2020; Tudose et al., 2022)*.

ROE = Net profit / Shareholder's equity *(Tudose et al., 2022)*

3.8.2 Return on Assets (ROA): ROA shows how effectively a company uses its assets to generate profit. It is crucial for assessing overall efficiency in asset utilisation *(Agustina et al., 2020; Bala Sani & Usman Mamuda, 2020; Kassi et al., 2019; Matar & Eneizan, 2018; Melwani & Sitlani, 2019; Mihaela Brindusa Tudose & Silvia Avasilcai, 2020; Mwangi & Wanjugu Murigu, 2015; Tudose et al., 2022)*.

ROA = Gross profit / Total assets *(Tudose et al., 2022)*

3.8.3 Return on Capital Employed (ROCE): ROCE evaluates the returns a company generates from the capital employed in the business. It provides insight into how well a company is generating profits from its total capital base, making it significant for assessing long-term profitability and efficiency.

$$\text{ROCE} = \frac{\text{Profit before Interest and Tax}}{\text{Capital Employed}} \times 100 \qquad \textit{(Rajkumar, 2014)}$$

*3.8.4 Economic Value Added (EVA)***:** EVA measures a company's true economic profit after considering the cost of capital. It is important for understanding if the company is generating value above its cost of capital.

EVA = Profit After Tax + Tax Adjusted Extraordinary Expenses

_ Tax Adjusted Extraordinary Income

_ Charge on Shareholders' Funds (Inclusive of Preference Capital) *(Agustina et al., 2020; Tripathi et al., 2018; Tudose et al., 2022)*.

*3.8.5 Earnings Per Share (EPS)***:** EPS indicates the profitability available to each share of stock. It is critical for shareholders as it directly affects share prices and dividends *(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020; Tudose et al., 2022)*.

$$\text{EPS} = \frac{\text{Net Income}}{\text{Outstanding number of Common Stocks}}$$

(Mohamed et al., 2021; Tabash et al., 2020),

*3.8.6 Net Profit Margin (NPM)***:** NPM represents the percentage of revenue that translates into net profit. It shows overall efficiency and profitability after all expenses have been deducted *(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020)*.

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

(Kassi et al., 2019; Kountur & Aprilia, 2020; Kurtikto Wahyudi et al., 2023)

*3.8.7 Profit Margin (PM)***:** PM reflects the percentage of revenue that remains as profit after various costs. It is a broader measure of profitability *(Tudose et al., 2022)*.

$$\text{Profit Margin} = \frac{\text{Revenue} - \text{Cost of Goods Sols}}{\text{Revenue}} \times 100$$

(Kassi et al., 2019; Kurtikto Wahyudi et al., 2023; Tudose et al., 2022)

3.8.8 Return on Investment (ROI): ROI measures the gain or loss generated on an investment relative to the amount invested. It is essential for assessing the efficiency of investments *(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020).*

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Cost of Investment}} \times 100$$

(Gaur, 2010; Matar & Eneizan, 2018; Melwani & Sitlani, 2019)

3.8.9 Return on Sales (ROS): ROS indicates how efficiently a company turns sales into profits. It is crucial for understanding operational efficiency *(Mihaela Brindusa Tudose & Silvia Avasilcai, 2020).*

$$\text{Return on Sales} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

(Le Thi Kim et al., 2021; Tudose et al., 2022),

3.8.10 Profit Growth Rate (PGR): PGR shows the rate at which a company's profit is growing. It is important for assessing future potential and sustainability of profits *(Tudose et al., 2022).*

$$\text{Profit Growth Rate } (\text{PGR}) = \frac{\left(\begin{array}{c}\text{Net Profit in Current Year } - \\ \text{Net Profit in Previous Year}\end{array}\right)}{\text{Net Profit in Previous Year}} \times 100$$

(Tudose et al., 2022)

3.8.11 Total Assets Turnover Ratio (TATO): TATO measures the efficiency of a company's use of its assets to generate sales. It is important for assessing operational efficiency *(Agustina et al., 2020).*

$$\text{Total Assets Turnover Ratio}(\text{TATO}) = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

(Agustina et al., 2020; Le Thi Kim et al., 2021)

3.8.12 Current Ratio (CR): CR indicates the ability of a company to pay off its short-term liabilities with its short-term assets. It is crucial for assessing short-term financial health *(Agustina et al., 2020)*.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

(Agustina et al., 2020; Kountur & Aprilia, 2020; K. Li et al., 2020; Tudose et al., 2022)

3.8.13 Debt Equity Ratio (DER): DER measures the company's financial leverage by comparing its total liabilities to shareholders' equity. It is important for understanding the financial risk and capital structure *(Agustina et al., 2020)*.

$$\text{Debt Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Shareholder's Equity}}$$

(Agustina et al., 2020; Nenu et al., 2018)

Each of these metrics provides valuable insights into different aspects of a company's performance. The relative importance of these metrics can vary depending on the specific context and industry. However, metrics that combine profitability, efficiency and financial stability tend to be the most significant indicators of a firm's performance. Therefore, a comprehensive evaluation of these metrics is essential for understanding the financial health and operational effectiveness of a company.

Among the above metrics, *Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE)* are considered in this research. These three metrics are selected because they provide a balanced view of a firm's performance by capturing profitability, efficiency and long-term financial health. ROE highlights the efficiency in using shareholders' equity, ROA measures overall asset utilisation efficiency and ROCE gives insights into the returns generated from the entire capital base. Together, they comprehensively assess the firm's ability to generate value and manage resources effectively.

3.9 Factors Determining Performance

In the study of corporate finance, understanding the determinants of company performance is crucial for stakeholders. This analysis considers the firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age as primary independent variables influencing corporate performance. In addition, other factors such as stock market performance, accelerated share repurchases (ASRs), subsequent period earnings, total risk management, corporate financial architecture, financial news, corporate ownership structures, the efficiency of boards of directors, relational capital disclosure (RCD), board size, promoter ownership, etc., are also considered, with these factors treated as unobserved error terms. The dependent variables representing company performance in this context include Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). By investigating these relationships, we aim to provide a comprehensive understanding of how various internal and external factors contribute to the financial success of firms.

3.9.1 Firm Size

In this study, the term "size of each selected stock or company" denotes the stock's market capitalisation. This is determined by multiplying the total number of common shares issued by the firm by the stock's closing market price. In this case, the data has been extracted from the CMIE Prowess database. This measure is essential as it provides the overall market value of a company's equity, serving as a key indicator of the firm's size and value in the market.

Firm Size = Stock's Market Capitalisation *(Acheampong et al., 2014; Dang et al., 2018; Odularu, 2009; Tan et al., 2012)*.

3.9.2 Capital Structure (Financial Leverage)

The significance of studying capital structure in India is paramount due to its direct influence on listed companies' financial health and profitability. Researchers can gain insights into the optimal financing strategies that enhance corporate performance by analysing the composition of a company's liabilities, including short-term and long-

term debt, alongside the proportion of equity. In the Indian context, where market dynamics, regulatory environments and economic conditions differ significantly from other regions, understanding the impact of various debt and equity combinations is crucial. Such a study would contribute to the existing body of knowledge and provide practical implications for corporate managers and policymakers aiming to maximise profitability and ensure sustainable growth. As an independent variable, capital structure can thus serve as a crucial determinant of financial outcomes, offering a refined perspective on how Indian companies can strategically navigate their economic decisions to achieve competitive advantage. In this study, the term "Capital Structure" denotes the proportion of total debt to total equity, commonly referred to as the Debt Equity Ratio. Total debt encompasses all outstanding liabilities or obligations that a company has incurred from borrowing funds, including both short-term and long-term debt obligations. This represents the overall financial obligation that a company must repay to its creditors or lenders. On the other hand, equity represents the shareholders' claim on the company's assets and earnings, which can be in the form of common stock, preferred stock, or retained earnings. For this analysis, data has been extracted from the CMIE Prowess database.

$$\text{Capital Structure} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

(Chen & Chen, 2011; Ghosh, 2011; Sathyanarayana et al., 2017; Titman & Wessels, 1988; Zeitun & Tian, 2014)

3.9.3 Liquidity

The bid-ask spread is often used as a standard measure of liquidity, but in their 2015 analysis of Indian firms *(Sharma & Paul, 2015)* opted for Modified Turnover (MT) as a more appropriate proxy. They define MT as the ratio of yearly shares traded to total outstanding shares, adjusted for earnings volatility. To calculate MT in this study, the yearly trading volume and total outstanding shares of the selected firms were first collected. Earnings volatility was then calculated as the absolute difference between the annual percentage change in profit before interest and taxes (PBIT) and the average of this change over the sample period. MT was subsequently derived by

dividing the yearly trading volume by the product of total outstanding shares and earnings volatility. This alternative liquidity measure, Modified Turnover, offers deeper insight into how trading activity, as a reflection of the ease of buying and selling shares, influences the financial performance of Indian firms. All necessary data for calculating MT, along with other financial variables, were sourced from the CMIE Prowess database.

$$\text{Liquidity} = \text{Modified Turnover} = \frac{\text{Number of shares traded}}{\text{Number of shares outstanding}} \times \text{Volatility of earnings}$$

(Sharma & Paul, 2015)

3.9.4 Tangibility

In the realm of corporate performance, the concept of tangibility holds pivotal significance as it denotes the proportion of a firm's assets that are tangible, encompassing physical and quantifiable assets such as machinery, buildings, equipment, etc. This distinction from intangible assets like patents, goodwill, etc., underscores tangibility's crucial role in shaping corporate strategies and outcomes. Tangible assets can serve as valuable collateral for securing debt, thereby potentially reducing borrowing costs and influencing a firm's leverage decisions. Consequently, firms with higher levels of tangible assets may exhibit a propensity towards increased debt in their capital structure, which can in turn bolster profitability and overall corporate performance. This relationship underscores the relevance of tangibility as a metric, crucial for understanding financial dynamics and strategic decisions within corporate environments. For this analysis, data has been extracted from the CMIE Prowess database. Tangibility can be represented as;

$$\text{Tangibility} = \frac{\text{Tangible Assets}}{\text{Total Assets}}$$

(Chadha & Sharma, 2015; Dada & Ghazali, 2016; Fosu, 2013; Margaritis & Psillaki, 2010)

3.9.5 Growth Rate

Corporate Growth Rate, specifically measured by revenue growth or sales growth, reflects the rate at which a company's sales increase over a defined period. This internal metric profoundly influences corporate performance, as companies experiencing higher growth rates often attain larger market shares and, consequently, enhance their overall performance. The growth rate is calculated as the percentage change in sales from one period to the next using the formula:

$$\text{Growth Rate} = \frac{\text{Sales in Current Period} - \text{Sales in Previous Period}}{\text{Sales in Previous Period}} \times 100$$

(Abor, 2005; Alfaro et al., 2019; J. Ooi, 1999)

This metric is pivotal for evaluating a company's financial progression, identifying trends in consumer demand, assessing the effectiveness of strategic initiatives and forecasting future revenue potential. For this analysis, data has been extracted from the CMIE Prowess database.

3.9.6 Business Risk

In the realm of corporate performance, business risk pertains to the variability and uncertainty inherent in a company's earnings or financial outcomes, stemming from diverse factors including market dynamics, competitive pressures, operational intricacies and economic fluctuations. Central to gauging this risk is the standard deviation of earnings, which quantifies the extent of dispersion in a company's earnings from its average over a defined period. A higher standard deviation signifies greater volatility in earnings, indicative of heightened business risk. Such variability can pose substantial challenges for firms, impairing their ability to forecast future earnings accurately and manage financial stability effectively. Consequently, the standard deviation of earnings emerges as a pivotal metric in assessing business risk, offering insights into the resilience and adaptability of firms in fluctuating market environments. Business risk is measured using the standard deviation (σ) of earnings as follows;

$$\text{Business Risk } \sigma_E = \sqrt{\frac{\sum_{i=1}^{n}\left(E_i - \bar{E}\right)^2}{n-1}}$$

(T. P. V. Le & Phan, 2017; Welch, 2003)

where E_i are individual earnings observations, $\bar{E}$ is the mean earnings, n is the number of observations. "Earnings" refers to net profit or net income. For this analysis, data has been extracted from the CMIE Prowess database.

3.9.7 Age

In the context of corporate performance analysis, the term "age" refers to the number of years since the firm was established. It is considered an independent variable used to analyse its impact on the firm's financial performance. The concept of age is based on the firm life cycle theory, which suggests that older firms might become more rigid and resistant to change. Age is thought to influence a firm's ability to adapt to new market conditions, adopt new technologies and implement innovative strategies. Therefore, this study includes age to determine how the number of years a firm has been in operation affects its performance, particularly in terms of profitability measures. The age of a firm can be calculated by simply taking the difference between the current year and the year of the firm's establishment. For this analysis, data has been extracted from the CMIE Prowess database. This process can be represented as follows:

Age = Current Year – Year of Establishment. *(Gaur, 2010; Kassi et al., 2019; Mwangi & Wanjugu Murigu, 2015)*

3.9.8 Industry Category (Sector Classification)

This study also explores into the performance and behaviour of non-financial corporations across various sectors within the Indian financial market. By focusing on the top companies in each sector as classified by their respective Nifty indices, we aim to provide a detailed analysis of the leading firms driving market dynamics. The sectors included in this study are Automobile, FMCG, Healthcare, IT, Media, Metal,

Pharma, Realty, Consumer Durables and Oil & Gas. The top 10 companies in each sector, selected based on their weightage in the Nifty index, are scrutinised to understand their impact on corporate performance. The sectoral categorisation acts as an independent variable, allowing for comparative analysis across different industries and providing a comprehensive overview of market trends and sectoral influences *(Seng & Yang, 2017).*

3.9.9 Miscellaneous Factors

a. Corporate ownership structures,
b. Board size and promoter ownership,
c. Corporate financial architecture,
d. Financial news,
e. Efficiency of boards of directors,
f. Relational Capital Disclosure (RCD),
g. Stock market performance,
h. Accelerated Share Repurchases (ASRs),
i. Subsequent period earnings,
j. Total risk management, etc.

Analysing firm size, capital structure, liquidity, tangibility, growth rate, business risk, firm age and industry category may provide valuable insights into their impact on corporate performance, measured explicitly by ROCE, ROA and ROE.

3.10 Corporate Performance Determinants in the Indian Non-financial Sector

The theoretical framework explains the intricate relationships between various factors influencing corporate performance in the Indian non-financial sector. Independent variables such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age serve as key determinants, impacting performance measures like ROCE, ROA and ROE, which collectively drive overall corporate performance. These dependent variables are further analysed across sectoral

classifications (e.g., Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas) and temporal dimensions (before and after 2014 periods), highlighting how economic and regulatory changes shape their dynamics. Furthermore, extraneous variables, including corporate ownership structures, board size, promoter ownership, financial architecture, financial news, etc., are acknowledged as unobserved elements influencing both key determinants and performance indicators. This comprehensive framework underscores the multifaceted and interconnected nature of corporate performance determinants, enabling a refined analysis across sectors and time periods for strategic decision-making.

3.11 Variables and Their Measurement

The table below provides an overview of the variables used in this study, categorising them into dependent, independent and extraneous variables. Each variable is described with its name, and indicator. This comprehensive framework ensures clarity in understanding the metrics employed to analyse corporate performance and its determinants.

Table 3.1

Variables and Indicators

Variable Type	Variable Name	Indicator / Symbol
Dependent Variables	Return on Capital Employed	ROCE
	Return on Assets	ROA
	Return on Equity	ROE
Independent Variables	Firm Size	Firm Size
	Capital Structure	Capital Structure
	Liquidity	Liquidity
	Tangibility	Tangibility of Assets
	Growth Rate	Growth Rate
	Business Risk	Business Risk
	Firm Age	Firm Aage

Extraneous Variables		
Variable Name	**Indicator / Symbol**	**Description**
Corporate Ownership Structures	COS	Distribution of ownership among shareholders
Board Size	BS	Number of directors on the board
Promoter Ownership	PO	Proportion of shares held by promoters
Corporate Financial Architecture	CFA	Structure of financial resources and strategies
Financial News	FN	Impact of news and media
Efficiency of Boards of Directors	EBD	Board effectiveness in governance
Relational Capital Disclosure (RCD)	RCD	Information disclosed about relational capital
Stock Market Performance	SMP	Stock price movements and volatility
Accelerated Share Repurchases (ASRs)	ASR	Share buybacks
Subsequent Period Earnings	SPE	Earnings in subsequent periods
Total Risk Management	TRM	Risk management strategies

3.12 Robustness

The robustness of this study is ensured through the meticulous inclusion and analysis of multiple independent, dependent and extraneous variables, thereby providing a comprehensive framework to evaluate corporate performance. By focusing on top companies within various sectors classified by their Nifty indices, the study captures sector-specific dynamics and trends. The use of dummy variable to distinguish between the time periods before and after 2014 enables the incorporation of temporal data into the regression model, allowing for precise assessment of the impacts of significant economic, regulatory and political reforms while controlling for other influential factors. Furthermore, extraneous variables such as corporate ownership structures, board size, promoter ownership, financial news, etc., are considered as potential unobserved error terms, acknowledging their indirect influence on corporate performance. This multifaceted approach not only enhances the validity of the

findings but also provides a robust basis for stakeholders to make informed decisions in a dynamic economic environment.

3.13 Chapter Summary

In conclusion, this theoretical framework chapter establishes a comprehensive foundation for understanding the determinants of corporate performance within the Indian financial market. This study aims to provide a detailed understanding of the various factors influencing financial outcomes by analysing the relationships between several key elements. These elements include firm size, capital structure, liquidity, asset tangibility, growth rate, business risk, firm age and the time periods before and after 2014. The performance metrics examined in relation to these factors are Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). The incorporation of dummy variable to identify temporal impacts, along with the examination of extraneous factors such as corporate ownership structures, board size, etc., considered as potential unobserved error terms, strengthens the reliability of the analysis. The conceptual framework, grounded in an extensive literature review, offers a strong basis for empirical investigation, advancing insights into the dynamics of corporate performance. This chapter underscores the importance of adopting a multidimensional approach to evaluating corporate performance, delivering practical insights for stakeholders to make informed decisions in a constantly evolving economic landscape.

Chapter IV
Materials and Methods

4.1 Introduction

This chapter provides an in-depth description of the methodological framework utilised to examine the determinants of corporate performance among non-financial corporations within the Indian securities market. The focus is on elucidating the research design, sampling methods, data sources and the key variables under investigation. By detailing the methodology, this chapter aims to offer a comprehensive understanding of the processes and techniques employed to analyse the influence of key variables on crucial corporate performance metrics, namely Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE).

Corporate performance analysis is fundamental for stakeholders such as investors, managers and policymakers, who rely on empirical data to make informed decisions. Previous studies have underscored the importance of a well-structured methodological approach to accurately capture the relationship between key variables and corporate performance *(N. Kumar & Singh, 2013; Switzer & Cao, 2011)*. This study employs a quantitative approach, incorporating both descriptive and analytical designs, to examine the influence of attributes such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age on key performance indicators. The descriptive design provides an overview of trends and characteristics, while the analytical design facilitates the application of advanced statistical techniques to generate practical insights and rigorously test hypotheses related to corporate performance.

The research design is structured to encompass a broad spectrum of non-financial corporations listed on the Nifty indices, allowing for a diverse and representative

sample. This approach aligns with the recommendations of scholars who advocate for using comprehensive datasets to enhance the robustness of performance analyses *(Kirchmaier & Grant, 2005)*. By focusing on the top 10 companies in each sector, this study ensures that the sample reflects significant market players, thereby providing a nuanced view of sector-specific dynamics and performance trends.

Data collection is another critical aspect of the methodological framework. This study relies on secondary data sourced from the CMIE Prowess database, a comprehensive repository of financial statements and performance metrics. The utilisation of secondary data is effective in providing reliable historical financial information for empirical research *(Pleshko et al., 2014)*. The selected data encompasses a range of financial reports and performance indicators, which are essential for the accurate assessment of determinants and their impact on performance metrics.

Finally, the chapter delineates the variables under investigation, including firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. Each of these variables is operationalised to ensure precise measurement and analysis *(Bianchi Martini et al., 2016; Ibrahim Obeidat, 2009)*. For instance, liquidity is measured by Modified Turnover as the ratio of yearly shares traded to total outstanding shares, adjusted for earnings volatility, as outlined by *(Sharma & Paul, 2015)*, while firm size is assessed through stock's market capitalisation *(Odularu, 2009; Tan et al., 2012)*. This meticulous approach to defining and measuring variables is critical for ensuring the validity and reliability of the study's findings.

In summary, this chapter lays the groundwork for the research by detailing the methodological framework and its components. It establishes the foundation for the subsequent analysis by outlining how the research design, sampling methods, data sources and variables contribute to a comprehensive examination of corporate performance in the Indian securities market.

4.2 Research Design

This study adopts a descriptive and analytical research design, focusing on the quantitative analysis of secondary data to investigate the relationships between

influencing factors and corporate performance metrics. The primary objective is to systematically examine how factors such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age influence corporate performance indicators, including Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE).

The descriptive aspect of the research design involves summarising and interpreting the data collected from various sources to provide a comprehensive overview of the current state of corporate performance among non-financial corporations in India. This approach is essential for understanding the distribution and central tendencies of the variables under study. By employing descriptive statistics, the study aims to offer insights into the general characteristics and trends within the dataset, thereby setting the stage for more detailed analysis *(Gujarati & Porter, 2009)*.

The analytical component of the research design involves the use of multiple regression analysis and panel data regression techniques. These statistical methods are chosen for their ability to handle large datasets and provide robust insights into the relationships between multiple independent variables and dependent performance metrics *(Gujarati & Porter, 2009)*. Multiple regression analysis allows for the examination of the linear relationships between influencing factors and corporate performance, helping to identify significant predictors and their impact *(Greene, 2018)*. Panel data regression is employed to capture variations that occur across different variables as well as over time and this method provides a more refined understanding of the underlying dynamics related to the research objectives, especially when analysing two distinct periods *(Wooldridge, 2010)*.

The use of secondary data is a crucial element of this research design. Data is sourced from the CMIE Prowess database, which offers a comprehensive and reliable repository of financial statements and performance metrics for Indian corporations. The secondary data approach facilitates the examination of historical trends and patterns, enabling the study to draw on a wealth of existing information to test hypotheses and derive meaningful conclusions. This method is supported by prior

research, which highlights the advantages of using secondary data for empirical analysis in corporate finance *(Baltagi, 2021)*.

The research design incorporates dummy variable to examine the temporal effects between two distinct periods, such as before and after 2014. This approach allows for an analysis of how these time periods impact corporate performance. By acknowledging the differences across various time frames, the study aims to control for time-specific factors that may influence financial outcomes. This way, it seeks to isolate the effects of key attributes from broader industry trends *(Greene, 2018; Wooldridge, 2010)*.

Overall, the research design is structured to provide a systematic and rigorous examination of the factors influencing corporate performance in the Indian financial market. By integrating descriptive and analytical approaches and utilising advanced statistical techniques, the study aims to contribute to the existing body of knowledge and offer actionable insights for stakeholders

4.3 Population and Sample of the Study

The population for this study encompasses all non-financial corporations listed on the Nifty indices within the Indian financial market. This broad population includes companies from various sectors, representing a comprehensive view of the non-financial corporate landscape in India. To ensure the study is both manageable and focused on the most influential market players, a representative sample has been drawn from this population using a judgmental or expert sampling.

The sample for this study consists of the top 10 companies from each of the following sectors: Automobile, Fast-Moving Consumer Goods (FMCG), Healthcare, Information Technology (IT), Media, Metal, Pharmaceuticals, Realty, Consumer Durables and Oil & Gas. These sectors were chosen due to their significant impact on the overall economy and their prominent representation in the Nifty indices. The selection of the top 10 companies in each sector is based on their weightage in the respective Nifty index, which reflects their market capitalisation and overall influence within their industry.

By focusing on these leading firms, the study aims to capture the key drivers of market dynamics and sector-specific performance. This approach ensures that the analysis is relevant to the major players that significantly contribute to the economic landscape, providing valuable insights for investors, policymakers and corporate managers. The inclusion of multiple sectors allows for a comparative analysis, highlighting differences and similarities in corporate performance determinants across various industries.

The chosen sample is deemed to be representative of the broader population of non-financial corporations, allowing for generalisable findings that can inform both academic research and practical decision-making. The emphasis on top companies within each sector ensures that the study addresses the most relevant and impactful entities, whose performance is likely to set trends and standards within their respective industries.

This sampling strategy is consistent with prior research methodologies that focus on high-impact firms to draw meaningful and actionable conclusions *(Ranjan Dutta et al., 2022; Sahoo & Swain, 2022)*. By leveraging this approach, the study aims to provide a detailed and precise understanding of the factors influencing corporate performance in the Indian non-financial sector, contributing to the development of effective strategies for enhancing corporate success and market stability.

4.4 Period of the Study

This study examines corporate performance across the entire period from 2010 to 2023, encompassing both a comprehensive analysis of trends over the full period and a segmented evaluation of two distinct sub-periods: 2010 - 2014 and 2015 - 2023. The segmentation is based on the significant economic and regulatory transformations that distinguish these two eras. By incorporating a dummy variable to represent the period before and after 2014, the research evaluates the temporal effects of these transformations on corporate performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). This dual approach captures both the broader trends and the specific shifts influenced by temporal dynamics.

The 2010 - 2014 period represents a post-global financial crisis era characterised by economic stabilisation and the persistence of traditional market practices. During this phase, firms faced challenges such as constrained access to capital, subdued global demand and evolving regulatory pressures aimed at fostering recovery and financial stability. The study examines how these external conditions influenced key attributes like firm size, capital structure, liquidity, asset tangibility, etc., which, in turn, impacted profitability and operational efficiency. The focus is on understanding how companies navigated through these challenges while laying the groundwork for future growth.

The period from 2015 to 2023 marks a phase of significant transformation in the Indian corporate landscape, driven by pivotal reforms such as the strengthening of the Companies Act, 2013, the implementation of the Goods and Services Tax (GST), the Insolvency and Bankruptcy Code (IBC), the Make in India initiative, Ease of Doing Business reforms and advancements in digital technology. This era also includes the recovery from global economic instability and the adaptation to heightened competition, globalisation and disruptions such as the COVID-19 pandemic. By evaluating this period, the study explores how firms leveraged innovation, strategic investments and operational agility to sustain growth and improve financial performance amidst these evolving conditions.

The use of a dummy variable for pre- and post-2014 provides a systematic way to assess the impact of these temporal dynamics on corporate performance. By comparing the two phases, the research highlights significant changes in financial strategies, sectoral dynamics and influencing factors. This approach offers a refined understanding of how non-financial corporations in India have adapted to external shocks and regulatory reforms, providing valuable insights for stakeholders to optimise strategies and anticipate future market trends.

4.5 Source and Types of Data

This study utilises secondary data to analyse the performance of non-financial corporations in India. The main source of data is the CMIE Prowess database, which provides extensive financial information on listed companies. The database is

renowned for its comprehensive and reliable financial statements, making it an ideal source for this research.

The data collected includes various influencing factors such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. These attributes are critical in understanding their influence on corporate performance metrics. Performance indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) are extracted from the financial statements available in the CMIE Prowess database.

In addition to the CMIE Prowess database, annual reports, balance sheets, income statements and other relevant financial documents of the selected companies are analysed to ensure a solid dataset. This comprehensive data collection approach allows for a detailed examination of the relationships between key attributes and corporate performance.

The use of secondary data is advantageous for this study as it provides a wealth of historical financial information, enabling a thorough analysis of trends and patterns over the two distinct periods: 2010 - 2014 and 2015 - 2023. This methodological choice ensures the reliability and validity of the findings, offering significant insights into the factors driving corporate performance in the Indian financial market.

4.6 Key Influencing Attributes

This study investigates a range of influencing attributes and their impact on corporate performance. The key variables analysed include:

4.6.1 Firm Size: This is denoted as the stock's market capitalisation. This is determined by multiplying the total number of common shares issued by the firm by the stock's closing market price. Larger firms typically have more market capitalisation and more market influence.

4.6.2 Capital Structure: Defined as the ratio of debt to equity, this variable illustrates how a company finances its operations and growth. A higher debt ratio may imply greater financial risk but can also enhance returns due to leverage.

4.6.3 Liquidity: Used as a proxy for liquidity, Modified Turnover (MT) measures the ratio of yearly shares traded to total outstanding shares, adjusted for earnings volatility. This metric provides deeper insights into liquidity conditions by capturing the ease of trading activity and its influence on financial performance, aiding firms in optimising liquidity management strategies.

4.6.4 Tangibility: This is the proportion of tangible assets to total assets. A higher tangibility ratio indicates a greater proportion of physical assets such as property, plant and equipment, which can be collateralised in financial transactions.

4.6.5 Growth Rate: Measured as the year-on-year percentage increase in sales, Corporate Growth Rate captures a company's expansion, highlighting its market penetration capabilities and scalability potential.

4.6.6 Business Risk: Measured by the variability in earnings before interest and taxes (EBIT), this variable captures the inherent risk associated with the company's operational activities. Higher variability indicates greater business risk and potential instability in earnings.

4.6.7 Firm Age: The number of years since the company's incorporation, which can impact its market experience, reputation and stability. Older firms may benefit from established market presence and consumer trust.

4.6.8 Industry Category: This classification helps in analysing sector-specific performance trends and differences. The sectors include Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas.

4.7 Corporate Performance Metrics

The performance indicators used to evaluate the impact of these attributes are:

4.7.1 Return on Capital Employed (ROCE): EBIT divided by capital employed, which shows the returns that a company generates from its capital.

4.7.2 Return on Assets (ROA): Gross profit divided by total assets, indicating how efficiently a company utilises its assets to generate profit.

4.7.3 Return on Equity (ROE): Net income divided by shareholders' equity, this ratio measures the profitability relative to shareholders' investments.

Table 4.1

Description and Measurement of Variables

Variable Type	Variable Name	Description	Measurement
Dependent Variables	Return on Capital Employed	EBIT divided by capital employed	$\text{ROCE} = \frac{\text{Profit before interest and Tax}}{\text{Capital Employed}} \times 100$ *(Rajkumar, 2014)*
	Return on Assets	Net income divided by total assets	ROA = Gross profit / Total assets *(Tudose et al., 2022)*
	Return on Equity	Net income divided by shareholders' equity	ROE = Net profit / Shareholder's equity *(Tudose et al., 2022)*
Independent Variables	Firm Size	Market Capitalisation	Firm Size = Stock's Market Capitalisation *(Acheampong et al., 2014; Dang et al., 2018; Odularu, 2009; Tan et al., 2012).*
	Capital Structure	Debt-to-equity ratio	Capital structure = $\frac{Total\ Debt}{Total\ Equity}$ *(Chen & Chen, 2011; Ghosh, 2011; Sathyanarayana et al., 2017; Titman & Wessels, 1988; Zeitun & Tian, 2014)*
	Liquidity	Modified Turnover	$\text{Liquidity} = \text{Modified Turnover} = \frac{\text{Number of shares traded}}{\text{Number of shares outstanding X Volatility of earnings}}$ *(Sharma & Paul, 2015)*
	Tangibility	Physical assets to total assets ratio	$\text{Tangibility} = \frac{\text{Tangible Assets}}{Total\ Assets}$ *(Chadha & Sharma, 2015; Dada & Ghazali, 2016; Fosu, 2013; Margaritis & Psillaki, 2010)*
	Growth Rate	Revenue or earnings growth	$\text{Growth Rate} = \frac{\text{Sales in Current Period} - \text{Sales in Previous Period}}{\text{Sales in Previous Period}} x100$ *(Abor, 2005; Alfaro et al., 2019; J. Ooi, 1999)*
	Business Risk	Variability in PAT	Business Risk $\sigma_E = \sqrt{\frac{\sum_{i=1}^{n}(E_i - \bar{E})^2}{n-1}}$ *(T. P. V. Le & Phan, 2017; Welch, 2003)*
	Firm Age	Years since inception	Age = Current Year − Year of Establishment. *(Gaur, 2010; Kassi et al., 2019; Mwangi & Wanjugu Murigu, 2015)*

This comprehensive set of variables and performance indicators provides a robust framework for analysing the factors influencing corporate performance in the Indian financial market.

4.8 Conceptual Model

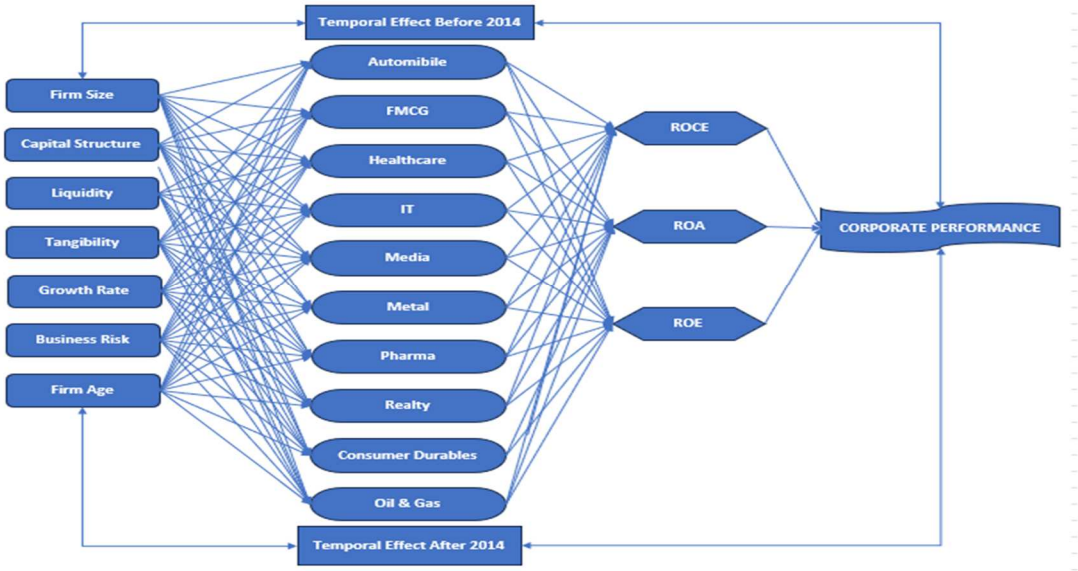
The conceptual model of this study is built upon a thorough review of existing literature on the determinants of corporate performance. As illustrated in Figure 4.1, the model provides a comprehensive framework to explore the determinants of corporate performance in the Indian non-financial sector. The model incorporates independent variables such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age, examining their influence on key financial performance metrics such as ROCE, ROA and ROE. These dependent variables are analysed across ten distinct sectors, including Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma, Realty, Consumer Durables and Oil & Gas.

The temporal dimension, encompassing the pre-2014 and post-2014 periods, is explicitly considered, acknowledging the economic and regulatory transformations that significantly shape corporate performance. The model integrates temporal shifts to capture how these structural changes impact financial outcomes over time. This dynamic approach adds depth to the analysis, allowing for a refined understanding of sectoral and temporal interactions.

The model also recognises the influence of extraneous variables, such as corporate ownership structures, board size, and promoter holdings, which act as unobserved factors potentially affecting both independent and dependent variables. By accounting for these variables, the model ensures robustness and reduces potential bias in the analysis.

Figure 4.1

Conceptual Model



Source: Researcher Compiled

The conceptual model highlights the interdependencies between selected variables, showing how they collectively drive corporate performance. It provides a holistic perspective, enabling stakeholders such as corporate leaders, policymakers and investors to make data driven decisions in a rapidly evolving economic environment. By integrating sectoral, temporal and organisational dimensions, this model serves as a vital tool for identifying growth opportunities, mitigating risks and enhancing financial outcomes.

4.9 Tools and Techniques Used for the Study

This study employs a diverse array of statistical tools and techniques to thoroughly analyse the data:

4.9.1 Descriptive Statistics: Applied to summarise and present key features of the dataset, including measures of central tendency, dispersion and frequency distributions, which provide a foundational overview of the sample.

4.9.2 Correlation Analysis: Assesses the strength and direction of relationships between variables, identifying significant associations and correlations within the dataset.

4.9.3 Multiple Regression Analysis: Used to examine the impact of key attributes on performance metrics, such as ROCE, ROA and ROE, by modelling the relationship between independent and dependent variables.

4.9.4 Dummy Variable: Employed to represent different time periods i.e., before and after 2014, controlling for time-specific effects and refining the analysis of temporal impacts.

4.9.5 Cross-Sectional Analysis: Conducted to evaluate data collected at a single point in time across different firms, providing insights into variations in performance metrics and attributes at that specific moment.

4.9.6 Panel Data Regression: Utilised to analyse data collected over multiple periods for the same firms, allowing for the examination of temporal dynamics and changes in performance metrics across different time frames.

4.9.7 Panel Unit Root Test: In time series data, it is customary to check stationarity and cointegration of time series variables to avoid the spurious regression problem caused by non-stationarity variables. With the availability of macroeconomic data over extended time periods, the issues of stationarity and cointegration have also emerged in the context of panel data. This was mainly because macro panels have large N and T compared to micro panels with large N but small T.

There are various tests for unit roots (or stationarity) in panel data sets. The Levin-Lin-Chu (2002), Harris-Tzavalis (1999), Breitung (2000), Breitung and Das (2005), Im-Persaran-Shin (2003) and Fisher-type (Choi, 2001) tests have a null hypothesis that all panels contain a unit root (i.e., are non-stationary). In contrast, the Hadri (2000) Lagrange Multiplier (LM) test has a null hypothesis that all panels are (trend) stationary.

We consider a simple panel data model with a first order autoregressive (AR) component:

$$Y_{it} = \rho_i Y_{i,t-1} + \boldsymbol{Z}'_{it}\boldsymbol{\gamma}_i + \varepsilon_{it} \quad \text{..........} \quad (1)$$

Where i = 1, 2, ………………. N and t = 1, 2, ……………. T. The term $\boldsymbol{Z_{it}^{I}}$ represents panel-specific means, panel specific means with a time trend, or nothing, depending on the variables under consideration. Panel Unit Root Tests are used to test the null hypothesis (H_0) : $\rho_i = 1$ for all i versus the alternative (H_a): $\rho_i < 1$

Equation (1) is often written as

$$\Delta Y_{it} = \emptyset_i Y_{i,t-1} + \boldsymbol{Z'_{it}\gamma_i} + \varepsilon_{it} \quad \text{……………………………………………} \quad (2)$$

So that the null hypothesis is then (H_0): $\emptyset_i = 0$ for all i versus the alternative (H_a): $\emptyset_i < 0$

The test statistics mentioned above use different versions of (2) to test for the existence of panel unit roots or non-stationarity. Levin-Lin-Lu test modifies equation (2) to account for potential autocorrelation. The number of lags is selected using an appropriate information criterion. Similarly, the Levin-Lin-Chu, Harris-Tsavalis and Breitung tests make the simplifying assumptions that all panels share the same autoregressive parameter, such that $\rho_i = \rho$ for all i. In contrast, other tests allow the autoregressive parameter to be panel-specific.

4.10 Panel Data Analysis and Model Selection

The present study employs panel data analysis to investigate the relationship between key variables, sectoral dynamics, temporal variations and their impact on corporate performance metrics such as ROCE, ROA and ROE. Panel data methods combine both time series and cross-sectional elements by collecting data on same cross-sectional units such as individuals, formulae, forms, cities, states etc., across time. Panel data analysis is an efficient analytical method as it allows the inclusion of data for N cross-sections and T time periods (Wooldridge, 2010). Thus, it provides more richer data compared to purely cross-sectional or time series data.

In the context of panel data, a distinction is made between balanced panel and unbalanced panel. Panel is balanced if each subject (Cross sectional unit) has the same number of observations. If each subject has different number of observations, then we have an unbalanced panel. In the context of panel data, a distinction is also made

between short panel and long panel. In a short panel, the number of cross- sectional units, N, is greater than the number of time periods, $T, ie, N > T$. In a long panel, it is T that is greater than $N, ie, T > N$. In the present study, our panel is both balanced and short.

4.10.1 Basic Panel Data Methods

Many different types of panel data methods are used for empirical analysis depending on the assumptions about the distribution of stochastic error term. We outline below some of the most commonly used panel data methods.

4.10.1.1 Pooled Ordinary Least Squares (OLS) Estimation

Pooled OLS regression or constant coefficients method of estimation is based on the assumption that there are no differences among the data matrices of the cross-sectional dimension, (N). In other words, the model estimates a common constant β_1 for all cross-sections. Practically, the common constant method implies that there are no differences between the estimated cross-sections. The pooled OLS estimator is the OLS estimator in the model.

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots + \beta_K X_{kit} + U_{it} - (1)$$

$$t = 1,2, \ldots T$$

$$i = 1,2 \ldots N$$

Thus, pooled OLS simply regress Y on an intercept and $X_2, X_3, \ldots X_k$ using all available observations.

Pooled OLS estimator is highly restrictive in the sense that camouflage the heterogeneity (individual uniqueness) that may exist among subjects. It may result in biased and inconsistent estimators if individual specific effects subsumed in U_{it} are correlated with included regressors in the model.

4.10.1.2 Fixed Effects Estimation

The fixed effects model specifies the intercept to vary across individuals while the slope coefficients are the same for each individual. The model is specified as

$$Y_{it} = \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots + \beta_K X_{kit} + \alpha_i + \varepsilon_{it} - (2)$$

Where X_{it} are regressors, α_i are random individual specific effects and ε_{it} is an idiosyncratic error *(Chris Brooks, 2015)*.

In the fixed effects model, the α_i in equation (2) are permitted to be correlated with the regressors, X_{it}. We view the error in equation (2) as $U_{it} = \alpha_i + \varepsilon_{it}$ and permit X_{it} to be correlated with the time invariant component of the error (α_i) while continuing to assume that X_{it} is uncorrelated with the idiosyncratic error ε_{it}

If we estimated the parameters of the fixed effects model using OLS, the resulting estimators will be biased and inconsistent due to the likely correlation between α_i and X_{it}. These are two popular methods to estimate the parameters $\alpha_1, \ldots \alpha_N$ and $\beta_2 \ldots \beta_K$ in the fixed effects model.

(a) The traditional view of the fixed effects approach is to assume that the unobserved effect α_i is a parameter to be estimated for each entity, i. In equation (2), α_i is the intercept of entity i (firm, city, Individual and so on) that is to be estimated along the β_j. This method is known as Learnt Squares Dummy Variable (LSDV) regression. The way we estimate an intercept for each i to put in a dummy variable for each cross-sectional observation along with the explanatory variables, X_{jit}. A standard extension of the individual effects in a two-way effects model that allows the intercept to vary over individuals and over time, namely;

$$Y_{it} = \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots + \beta_K X_{kit} + \alpha_i + \lambda_t + \varepsilon_{it} - (3)$$

For short panels, it is common to let the time effects λ_t to be fixed effects. Then equation (3) reduces to equation (1), if the regressors in (1) include a set of time dummies. The resulting model is known as two-way fixed effects model because we have allowed for both individual and time effects.

(b) The LSDV regression to estimate FE model is not very practical for panel data sets with many cross-sectional units. When N is large, it results in the estimation of too many parameters which consumes many degrees of freedom. There is an alternative, more economical way to estimate parameters of equations (2) or (3). The method is called fixed effects transformation. To understand this method, it is important to note that estimation of the parameters $\beta_2, \beta_3, \ldots \beta_K$ in equation (2), we must remove fixed effects α_i. The LSDV model take in to consideration α_i by incorporating dummy variables in the model.

The fixed effects transformation also known as within transformation, eliminate α_i by using time – demeaned data. In other words, the within transformation does so by mean-differencing. The resulting estimator is known as fixed effects estimator or within estimator *(Chris Brooks, 2015)*.

The fixed effects α_i in the model (2) can be eliminated by subtraction of the corresponding model for individual means $\bar{Y}_i = \beta_2 \bar{X}_{2i} + \beta_3 \bar{X}_{3i} + \cdots + \beta_K \bar{X}_{Ki} + \bar{\varepsilon}_i$ leading to the within model or mean – difference model.

$$(Y_{it} - \bar{Y}_i) = \beta_2 (X_{2it} - \bar{X}_{2i}) + \beta_3 (X_{3it} - \bar{X}_{3i}) + \cdots + \beta_K (X_{Kit} - \bar{X}_{Ki}) + (\varepsilon_{it} - \bar{\varepsilon}_i) - (4)$$

Where, for example $\bar{X}_i = \sum_{t=1}^{T} \frac{X_{it}}{T}$ and only regressors that have within variation are included in equation (4) because otherwise $X_{it} - \bar{X}_i = 0$. The within estimator is the OLS estimator of this model.

4.10.1.3 Random Effects Estimation

To understand the RE model we begin with the same unobserved effects model as before

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots + \beta_K X_{kit} + \alpha_i + \varepsilon_{it} \ - (5)$$

In using fixed effects, the goal is to eliminate α_i because it is thought to be correlated with one or more of the X_{jit}. But suppose we think α_i is uncorrelated with each explanatory variable in all time periods. Then using a transformation to eliminate α_i results in inefficient estimators.

Equation (5) become random effects model when we assume that the unobserved effect α_i is uncorrelated with each explanatory variable

$$Cor\left(X_{jit}, \alpha_i\right) = 0 \ -(6)$$

$$t = 1,2,..T$$

$$j = 1,2,..K$$

Now the crucial question is, how to best estimate β_j in (5) given (6). If we define the composite error term as $U_{it} = \alpha_i + \varepsilon_{it}$, then, it can be shown that

$$Cor\ (U_{it}, U_{is}) = \sigma_\alpha^2/(\sigma_\alpha^2 + \sigma_\varepsilon^2) \text{ for all } s \neq t \ -(7)$$

Thus, there will be positive serial correlation in the error term we can use Generalised Least Squares (GLS) to solve the serial correlation problem here. The RE estimator is the Feasible Generalised Least Squares (FGLS) estimator of β in (5) given (7) for the error correlations *(Chris Brooks, 2015)*. The RE estimator obtained by OLS estimation in the transformed model

$$\left(Y_{it} - \hat{\theta}\bar{Y}_i\right) = \beta_1\left(1 - \hat{\theta}\right) + \beta_2(X_{2it} - \hat{\theta}\bar{X}_{2i}) + \beta_3\left(X_{3it} - \hat{\theta}\bar{X}_{3i}\right) + \cdots + \beta_K\left(X_{Kit} - \hat{\theta}\bar{X}_{Ki}\right) + \left(U_{it} - \hat{\theta}\bar{U}_i\right) - (8)$$

Where $\hat{\theta} = 1 - \left\{\frac{1}{[1+T(\hat{\sigma}_\alpha^2/\hat{\sigma}_\varepsilon^2]}\right\}^{1/2}$. The feasible GLS estimator that uses $\hat{\theta}$ is called the random effects estimator.

4.10.2 The Hausman Test

The Hausman test is used to make a choice between fixed effects and random effects approaches. In the context of panel data, the choice between fixed effects and random effects methods involves investigating whether the regressors are correlated with the individual effect, α_i. Hausman test uses the following test statistic:

$$H = \left(\hat{\beta}^{FE} - \hat{\beta}^{RE}\right)^1\left[var\left(\hat{\beta}^{FE}\right) - var\left(\hat{\beta}^{RE}\right)\right]^{-1}\left(\hat{\beta}^{FE} - \hat{\beta}^{RE}\right) \sim \chi^2_{(K)}$$

If the value of H statistics is large, we use FE estimator, otherwise RE estimator will be used.

4.11 Chapter Summary

This chapter has outlined the methodological framework underpinning the study, detailing the research design, sampling methods, study period, data sources and the variables examined. The use of both cross-sectional and panel data analysis, alongside advanced statistical tools such as multiple regression, correlation and descriptive statistics, provides a comprehensive approach to understanding the impact of key attributes on corporate performance metrics. The integration of a conceptual framework that incorporates firm size, capital structure, liquidity, tangibility, growth rate, business risk, firm age and industry category sets a solid foundation for the study.

By leveraging these methodologies, the research aims to uncover significant insights into the determinants of corporate performance among non-financial corporations in the Indian financial market. The subsequent chapters will build on this methodological groundwork to present detailed analysis, interpret the findings and discuss their implications.

Chapter V

Results and Discussion

5.1 Introduction

This study conducts an in-depth analysis of key financial performance variables across a sample of 100 Indian non-financial companies, segmented into 10 sectors. The primary performance indicators analysed are Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). These metrics are examined alongside key influencing factors such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. By leveraging time-series panel data and sectoral segmentation, the study explores the diverse financial characteristics and operational environments of these companies, identifying patterns that help explain variations in efficiency, profitability and risk profiles.

The analysis begins with descriptive statistics, providing a detailed examination of both corporate performance indicators and the key factors influencing corporate performance. Metrics such as mean, standard deviation, skewness and kurtosis are used to understand variability, distribution characteristics and the presence of outliers. Sectoral differences are highlighted, offering insights into how financial performance varies across industries and providing a foundation for assessing the financial health and operational strategies of the firms.

Building on this, correlation and panel data analyses are conducted to explore the relationships between financial performance and key determinants. Fixed and random effect models are employed to evaluate the impact of these factors on ROCE, ROA and ROE. Sectoral analyses further uncover how these relationships differ across industries, providing a refined understanding of sector-specific financial dynamics.

Lastly, the study examines the temporal impact of significant economic and regulatory reforms, particularly post-2014. By incorporating dummy variable, the analysis compares corporate performance metrics before and after these reforms, offering

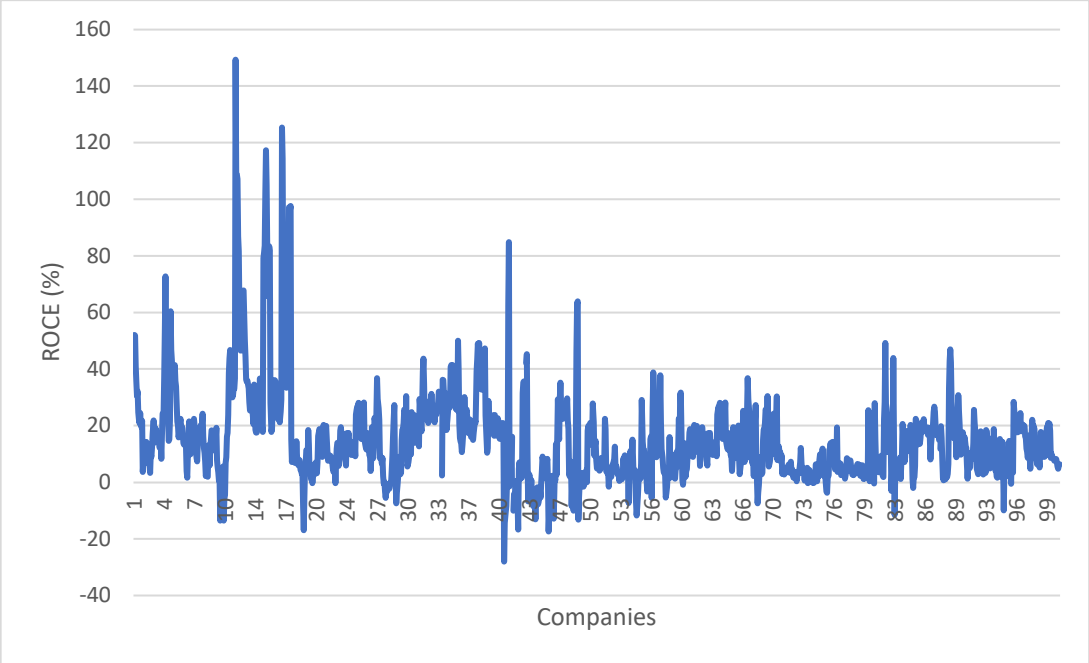
valuable insights into the influence of external factors on financial outcomes across sectors and over time.

5.2 Trends in Corporate Performance Indicators

This section presents the trends of key financial performance indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) across 100 Indian non-financial companies. By visualising these metrics in time-series format, the analysis highlights fluctuations and sectoral differences that influence financial efficiency and profitability. These trends offer valuable insights into the operational and financial dynamics of the sampled firms, setting the stage for a deeper exploration of underlying factors driving performance.

Figure 5.1

ROCE Trends for All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

The figure 5.1 titled "ROCE Trends for All Companies" presents the Return on Capital Employed for all companies selected in a time-series format, with individual companies represented sequentially on the x-axis and their corresponding ROCE values in percentage on the y-axis. ROCE values range widely, from a high of

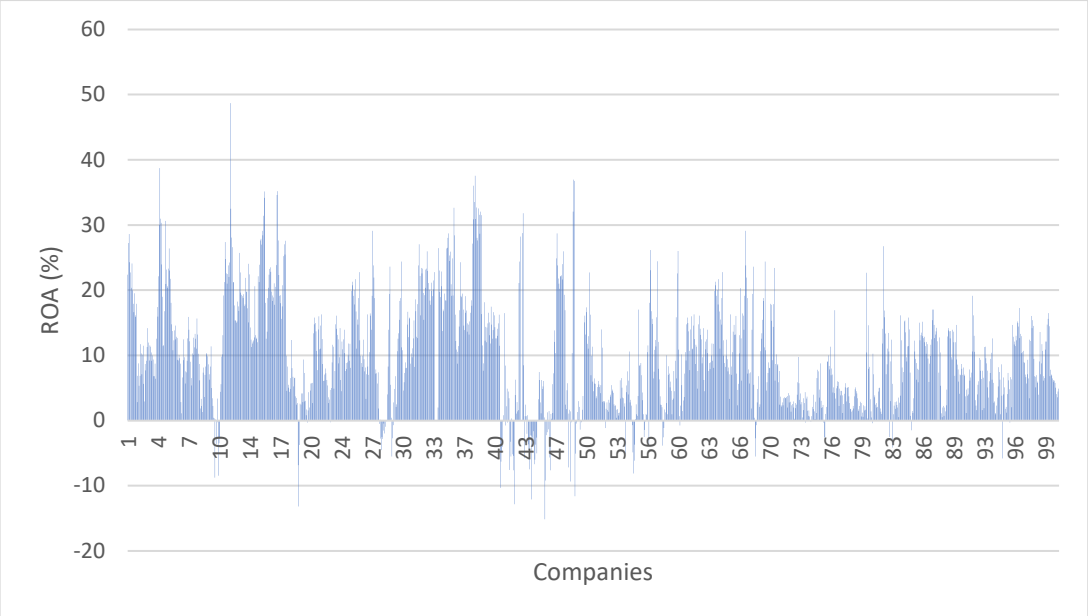
approximately 150 to a low nearing negative 40 percentage. The chart reveals considerable fluctuation, particularly within the first quarter of companies (1–25), which include sectors such as Automobile, FMCG and Health Care. Notably, the initial ten companies represent the Automobile sector, followed by the next ten from FMCG and the subsequent ten from Health Care.

After the 25th company, the data stabilises somewhat, though intermittent peaks appear, notably around companies 39 and 83, from the IT and Realty sectors, respectively. The latter half of the graph shows more consistent ROCE values with less extreme variation, suggesting potential sectoral or operational factors influencing ROCE performance. This visualisation highlights the diversity in capital efficiency across the sample, which could reflect industry-specific characteristics, differences in management practices, or varying operational environments among the companies.

This chart provides a basis for analysing the spread and consistency of ROCE across companies, identifying patterns and possibly correlating these with other financial variables to uncover deeper insights into company performance trends.

Figure 5.2

ROA Trends for All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

The above figure titled "ROA Trends for All Companies" illustrates the Return on Assets for a sample of 100 companies, with each company represented sequentially on the x-axis and their respective ROA in percentage values on the y-axis. The ROA values fluctuate significantly, with peaks reaching around 50 and troughs dropping below negative 10. This spread reflects a considerable variability in how effectively these companies are utilising their assets to generate earnings.

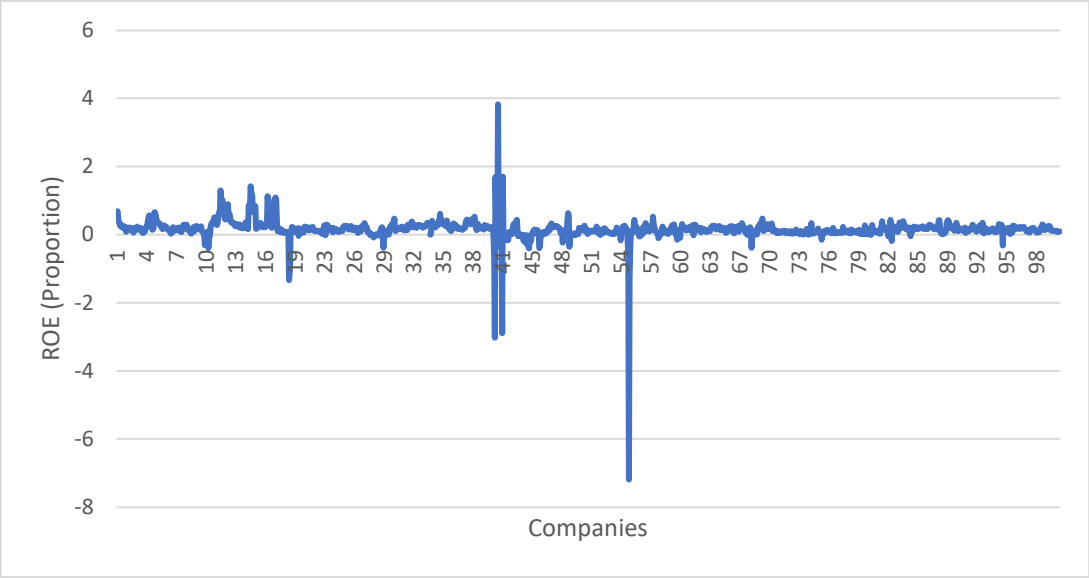
The initial segment of the chart, covering companies 1 through approximately 25 and consisting of the Automobile, FMCG and Health Care sectors, shows frequent high spikes in ROA, with values often exceeding 30. Following this, the data generally stabilises, though occasional sharp peaks and dips continue throughout the chart, suggesting that some sectors experience episodic periods of high or low asset returns.

Notably, there is a visible pattern of increased fluctuation among companies in the mid-range (approximately 25 to 70, encompassing the Health Care, IT, Media, Metal and Pharma sectors), with the chart showing clusters of positive spikes as well as moments of decline. The latter portion of the graph, particularly from company 70 onward, which includes the Realty, Consumer Durables and Oil & Gas sectors, displays a more moderate and narrow range of ROA values, indicating relatively consistent asset returns across these companies.

Overall, this chart underscores the diversity in ROA performance across the sample, pointing to potential differences in asset management efficiency, sector-specific influences, or operational challenges. This variability in ROA could provide an opportunity for deeper analysis on the factors that contribute to efficient asset utilisation and profitability in different company segments.

Figure 5.3

ROE Trends for All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

The figure 5.3 titled "ROE Trends for All Companies" displays the Return on Equity for 100 companies, with individual companies represented on the x-axis and their corresponding ROE values on the y-axis. Unlike the previous metrics of ROCE and ROA, the ROE values exhibit a much narrower range, largely fluctuating between -2 and 2, indicating relatively low volatility in equity returns for most companies in this sample.

There are a few notable deviations from this general trend. Around companies 41 and 53, representing the Media and Metal sectors, the ROE values show significant spikes, with one reaching as high as 5 and another dropping to approximately -8. These sharp outliers suggest that certain companies may have experienced unique financial events or one-time adjustments that dramatically affected their equity returns during the period under analysis.

The remaining companies demonstrate consistently small variations in ROE, hinting at uniformity in equity return generation across the sample. This overall stability could reflect conservative financial practices, low leverage, or consistent profitability among these firms. The two outliers, however, emphasise the importance of

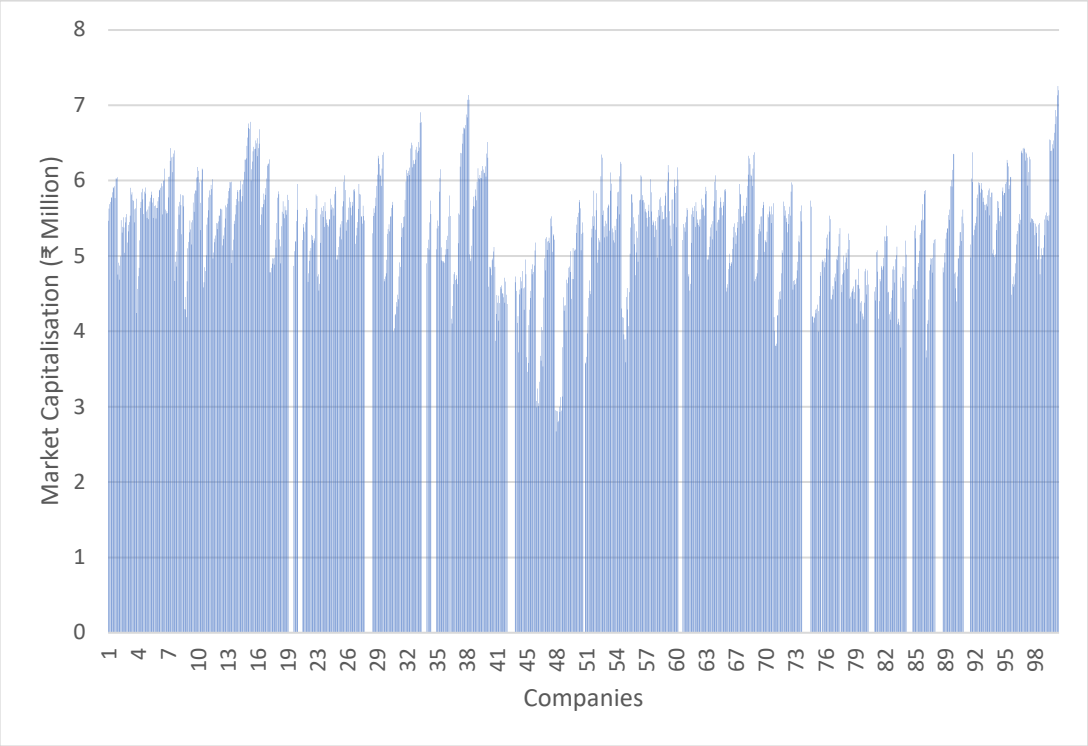
examining individual company data to uncover potential anomalies or extraordinary circumstances affecting equity returns

5.3 Trends in Key Factors Influencing Corporate Performance

This section examines the trends and distributions of key factors influencing corporate performance such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age, across 100 companies. Through visual analysis, these variables are explored to uncover patterns and sectoral differences that may influence financial performance. The use of logarithmic transformations and other techniques highlights variability and outliers, providing deeper insights into how these factors contribute to the operational and financial dynamics of the firms. This analysis forms the basis for understanding the broader impacts of these variables on performance metrics.

Figure 5.4

Firm Size (Log Scale): All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

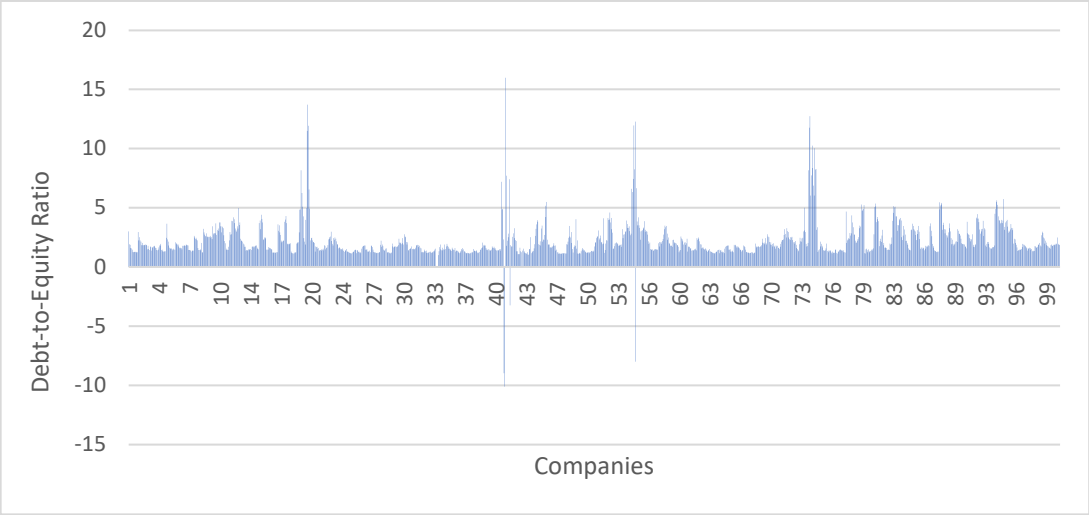
Figure 5.4 titled "Firm Size (Log Scale): All Companies" presents the log-transformed market capitalisation for all companies, with each company represented sequentially on the x-axis and the logarithmic scale of market capitalisation on the y-axis. By applying a logarithmic transformation, the wide range of firm sizes becomes more manageable and allows for clearer visual comparison of the relative sizes of companies within the sample.

Most companies have log-transformed market capitalizations between 6 and 8, indicating a clustering of firm sizes at the higher end of the logarithmic scale. This suggests that most companies in the sample have relatively large market capitalisations, with the log transformation minimising the impact of extreme values, allowing for easier observation of smaller variations among similarly sized firms. Notable gaps appear intermittently throughout the chart, especially near companies 20, 37, 58 and 77 from the FMCG, Health Care, IT, Metal and Realty sectors. These gaps may indicate instances where company size data was either unavailable or fell below the visualisation threshold, resulting in blank spaces on the graph.

Overall, the chart shows a relatively consistent distribution of firm sizes across the sample, with periodic dips that suggest lower market capitalisations for certain companies. The high clustering at the top of the range reflects the prevalence of larger firms, while the gaps may hint at the presence of much smaller firms. This logarithmic perspective on firm size normalises the data, enabling more meaningful comparisons across companies with varying market capitalisations. By emphasising proportional differences and minimising the impact of outliers, it highlights size-related trends and provides valuable context for analysing the relationship between firm size and financial performance metrics.

Figure 5.5

Capital Structure: All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

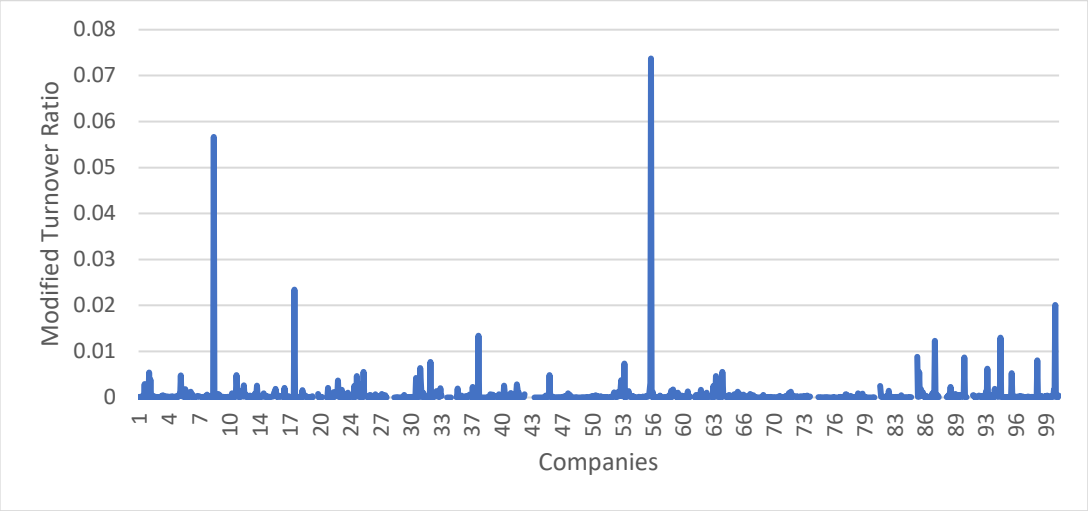
The above given figure 5.5 "Capital Structure: All Companies" illustrates the leverage levels for 100 companies, with each company represented sequentially on the x-axis and their respective leverage ratios on the y-axis. Leverage, as shown here, indicates the degree to which companies rely on debt financing relative to their equity, with positive values representing higher leverage and negative values indicating net cash positions or minimal debt reliance.

Most companies exhibit leverage ratios that fluctuate within a relatively narrow range, primarily between -5 and 5. This concentration around zero suggests that most companies maintain moderate leverage levels, either balancing debt and equity or operating with minimal leverage. However, there are several pronounced spikes on the chart. Notably, around companies 12, 44, 55 and 73, representing the FMCG, Media, Metal and Realty sectors, respectively, leverage values peak between 10 and 15, indicating that these companies have significantly higher debt levels. Conversely, occasional troughs appear, such as at company 53 from the Metal sector, where leverage dips to around -15. This may indicate companies that hold more cash than debt or utilise negative net debt positions.

These outliers highlight a subset of firms with extreme leverage profiles, either adopting aggressive debt-financed strategies or maintaining exceptionally conservative, cash-rich balance sheets. The presence of these spikes and dips could reflect varying industry practices, risk tolerance, or capital structure preferences across sectors. This variability underscores the importance of considering capital structure's impact on firm performance and risk, as the influence of debt can vary widely depending on the leverage level and the company's sector and operational context.

Figure 5.6

Liquidity Analysis: Modified Turnover Ratio for All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

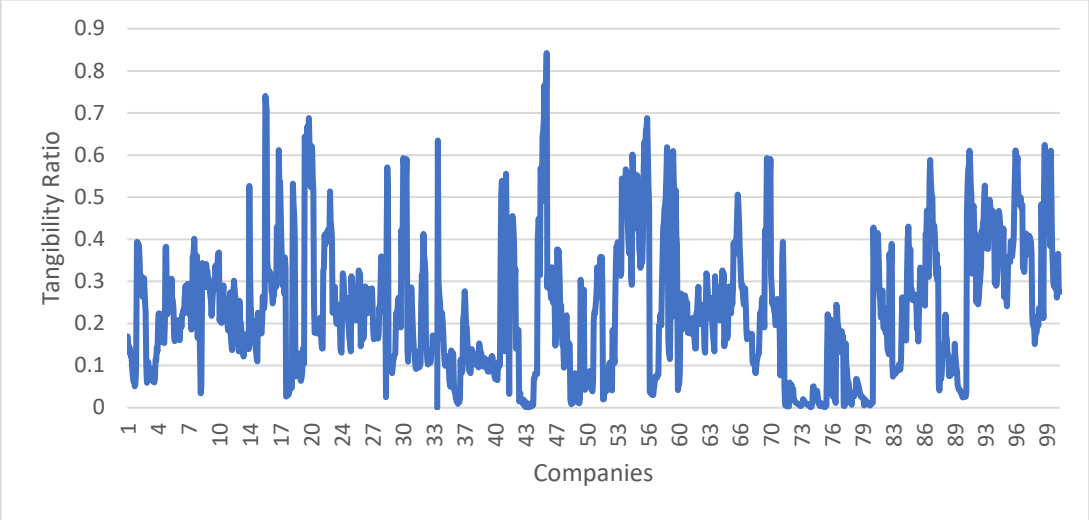
Liquidity, typically measured by the bid-ask spread, is a key indicator of a firm's ability to meet short-term obligations. However, in their 2015 analysis of Indian firms, *(Sharma & Paul, 2015)* proposed the Modified Turnover (MT) ratio as a more suitable proxy for liquidity. The Modified Turnover ratio is defined as the ratio of yearly shares traded to the total number of shares outstanding, adjusted for earnings volatility. This measure provides a nuanced view of how trading activity reflects the ease of buying and selling shares in relation to financial performance.

The above mentioned figure 5.6 "Liquidity Analysis: Modified Turnover Ratio for All Companies" highlights the liquidity levels of firms in the sample, using the Modified

Turnover ratio as a measure of market liquidity. The y-axis displays each company's liquidity ratio, while the x-axis lists the firms sequentially. The chart shows that most companies have liquidity ratios below 0.01, indicating low market liquidity, or limited ease in trading their shares. This suggests that the shares of many firms are infrequently traded, which could reflect limited investor interest or smaller market capitalisations. However, a few outliers exhibit significantly higher liquidity, indicating more actively traded shares, which may provide these firms with better financial flexibility or appeal to investors seeking liquidity. The Modified Turnover ratio thus sheds light on the trading activity and market engagement of firms.

Figure 5.7

Tangibility Ratio: All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

The figure 5.7 "Tangibility Ratio: All Companies" shows the asset tangibility ratios for 100 companies, with each company represented sequentially on the x-axis and the tangibility ratio on the y-axis. Tangibility of assets refers to the proportion of a company's assets that are physical or tangible, such as property, plant, equipment, etc. A higher tangibility ratio suggests a greater reliance on physical assets, while a lower ratio indicates a larger proportion of intangible assets, such as patents or goodwill.

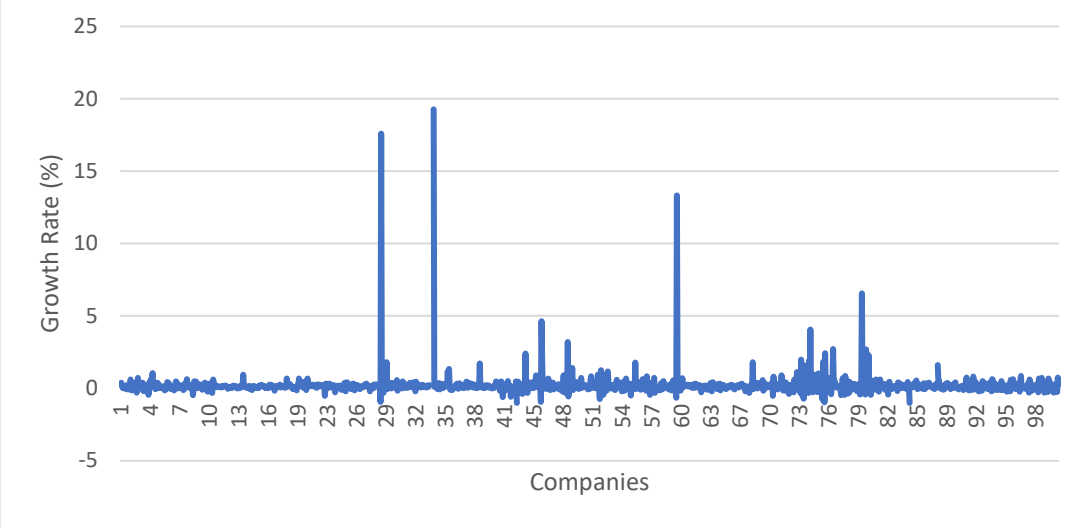
The tangibility ratios fluctuate considerably across the companies, ranging from near 0 to just under 0.9. In the initial third of the dataset (companies 1 to 33, from the

Automobile, FMCG and Health Care sectors), tangibility values oscillate between 0.1 and 0.6, showing significant variation in physical asset reliance among these firms. In the middle section (companies 34 to 67, from the IT, Media, Metal and Pharma sectors), similar volatility appears, with a notable spike around company 44 in the Media sector, where the ratio approaches 0.8. The latter portion of the chart (companies 68 to 100, from the Pharma, Realty, Consumer Durables and Oil & Gas sectors) continues to exhibit fluctuations, with some companies maintaining tangibility ratios above 0.5, while others dip below 0.1, indicating substantial diversity in asset structure.

This variability in asset tangibility could be influenced by industry-specific factors, as certain sectors may require more physical assets for operations, while others may operate primarily with intangible assets. For instance, manufacturing firms typically have higher tangibility ratios due to heavy investment in equipment and facilities, whereas technology or service-oriented firms may have lower ratios. This data could provide insights into capital structure decisions, as firms with higher tangibility ratios may have different financing needs and risk profiles compared to those with lower ratios. Understanding the role of asset tangibility is essential for analysing its impact on financial metrics and overall firm stability.

Figure 5.8

Sales Growth Rate: All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

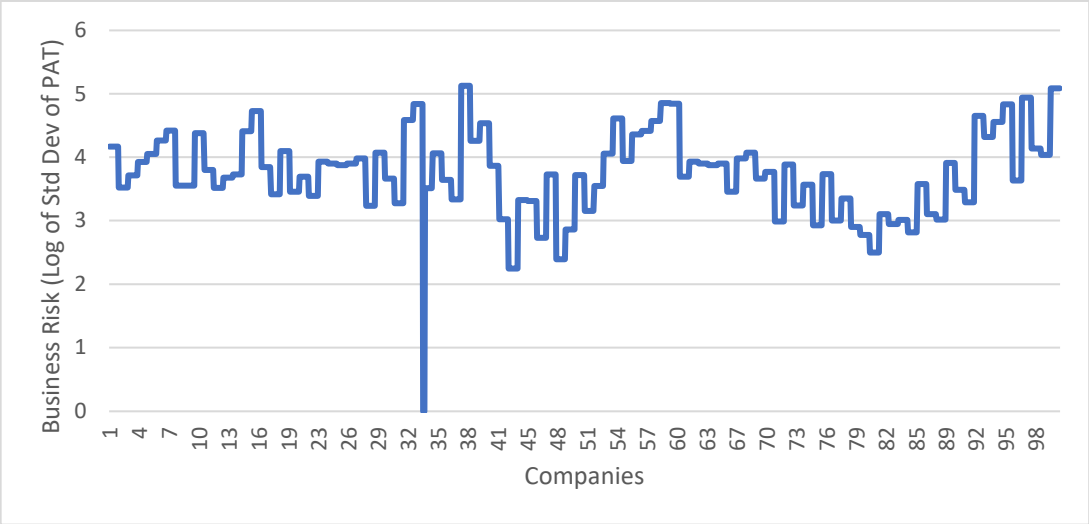
Corporate growth rate, specifically measured by revenue or sales growth, reflects the rate at which a company's sales increase over a defined period. This internal metric is a vital indicator of corporate performance, as companies with higher growth rates often achieve larger market shares and improved overall financial performance. This variable is critical for evaluating a company's financial trajectory, identifying trends in consumer demand, assessing the effectiveness of strategic initiatives and forecasting future revenue potential.

The above figure 5.8 titled "Sales Growth Rate: All Companies" depicts the growth rates for the 100 sampled companies. Each company is represented sequentially on the x-axis, with their respective growth rates plotted on the y-axis. The chart shows that most companies exhibit relatively modest growth rates, generally fluctuating between -5% and 5%. However, notable spikes appear, with some companies experiencing growth rates as high as 20%, indicating periods of rapid expansion. For instance, companies 29, 31 and 59, from the Health Care, IT and Metal sectors, respectively, demonstrate significant growth, suggesting that these firms capitalised on unique market opportunities or effective business strategies.

Overall, the distribution indicates that most companies have stable or slow growth, with a few high-growth outliers. These spikes in growth could result from successful product launches, strategic business decisions, or other impactful events. Understanding these growth patterns can provide valuable insights into the factors driving expansion across different firms and sectors, as well as potential correlations between growth rates and other financial performance metrics within the sample.

Figure 5.9

Business Risk: All Companies (Log of PAT Variability)



Source: Data compiled by the researcher from CMIE ProwessIQ

The figure 5.9 "Business Risk: All Companies (Log of PAT Variability)" displays the logarithmic transformation of business risk for 100 companies, with each company sequentially represented on the x-axis and their respective business risk levels on the y-axis. Business risk, as indicated here, reflects the inherent volatility and uncertainty associated with each company's operations, financial performance, or market environment. Using a logarithmic scale for business risk reduces the impact of extreme values, allowing for a clearer comparison across the sample.

The figure shows business risk levels that mostly range from 2 to 5, with gradual increases and decreases over different sections of the sample. A noticeable drop to near zero appears around company 34 (from IT sector), indicating an outlier with exceptionally low business risk, which may be due to specific characteristics of that company, such as highly predictable cash flows or a stable market position. Apart from this dip, the data generally reveals a pattern of cyclical fluctuations, with alternating periods of moderate to high business risk across the companies.

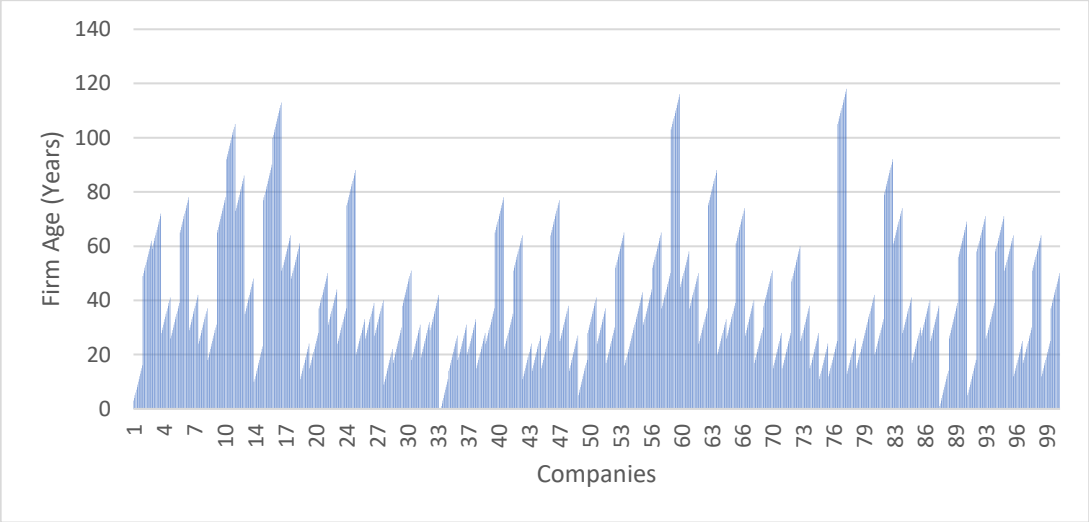
Toward the latter portion of the chart, particularly from companies 70 to 100 - representing the Pharma, Realty, Consumer Durables and Oil & Gas sectors - a gradual upward trend suggests an increasing level of business risk for these firms.

This rise may reflect sectoral or economic factors affecting the volatility of these companies' operations. The highest value approaches 6, found at the very end of the sample, indicating that some firms face significant operational or market challenges.

The logarithmic perspective smooths extreme differences, providing a balanced view of risk distribution and allowing for a more nuanced understanding of the risk landscape across different companies. This analysis can inform further exploration of the factors that contribute to elevated business risk and how these risk levels correlate with other financial metrics within the study.

Figure 5.10

Firm Age: All Companies



Source: Data compiled by the researcher from CMIE ProwessIQ

The figure 5.10 titled "Firm Age: All Companies" displays the age of 100 companies, with each company represented sequentially on the x-axis and their corresponding firm age (in years) on the y-axis. Firm age can be an important variable, often correlated with stability, industry experience and operational maturity.

The figure reveals a diverse range of firm ages across the sample, with ages spanning from less than 10 years to over 120 years. The data displays a recurring pattern of peaks and valleys, with many companies clustered around 50 to 100 years of age. Notable spikes occur around companies 14, 30, 58, 76 and 87 - representing the FMCG, Health Care, Metal, Realty and Consumer Durables sectors, respectively -

where firm age reaches or exceeds the 100-year mark, indicating long-established companies with potentially greater experience and resilience in their industries.

In contrast, there are also clusters of much younger firms, particularly in the initial and middle segments of the chart, where ages dip below 20 years. This distribution suggests that the sample includes both seasoned firms and relatively new entrants, reflecting a mix of maturity levels. The variation in age across the dataset highlights the diverse lifecycle stages of these companies, ranging from startups to century-old institutions. This diversity in age can influence various financial metrics, such as capital structure, profitability and risk profiles and is an important factor to consider in the analysis. Understanding the role of firm age may offer insights into how long-established firms compare with newer companies in terms of financial performance and strategic decision-making.

The analysis of the financial metrics across the 100 companies reveals significant variability in performance and operational strategies. While some companies show robust efficiency and growth, others face challenges, as indicated by fluctuating ROCE, ROA and liquidity ratios. The study also highlights sector-specific trends, where certain sectors exhibit consistent performance, whereas others demonstrate higher volatility in metrics like capital structure and business risk. These findings suggest that firm characteristics such as size, age, asset tangibility and leverage play crucial roles in shaping financial outcomes. Ultimately, these visual analyses underscore the importance of understanding the interplay between financial variables in guiding strategic decisions and improving long-term performance within different sectors.

5.4 Descriptive Statistics: All Companies

This section presents an extensive analysis of the descriptive statistics for key financial variables across a sample of 100 companies, divided into 10 sectors. The focus is on both corporate performance indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE), as well as key factors influencing corporate performance including firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. By examining the

mean, standard deviation, skewness and kurtosis of these variables, the analysis highlights the variability and distribution characteristics that shape financial performance across different sectors. The study explores how factors like capital efficiency, profitability, leverage ratios, etc., differ across industries and provides insights into the financial health, risk exposure and operational strategies of the firms in the dataset. Through detailed statistical comparisons, this study aims to uncover the key financial patterns that influence sectoral performance and business outcomes.

Research Objective 1:

To analyse the distributional characteristics (averages, variability, skewness and kurtosis) and the correlations of financial performance metrics (ROCE, ROA and ROE) with key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age among Indian non-financial companies.

Research Hypothesis:

Key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age exhibit distinct distributional characteristics (averages, variability, skewness and kurtosis) and significant correlations that reflect sectoral differences in financial performance metrics (ROCE, ROA and ROE) among Indian non-financial companies

5.4.1 Descriptive Statistics of Corporate Performance Indicators (All Companies)

This section provides an outline of the descriptive statistics for the corporate performance indicators: Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). These metrics are analysed to understand their central tendencies, variability and distribution characteristics across the sample of 100 companies. The analysis highlights key patterns in financial performance, which offer valuable insights into the efficiency and profitability variations among firms.

Table 5.1

Descriptive Statistics of Corporate Performance Indicators (All Companies)

Variables	Mean	Standard Deviation	Skewness	Kurtosis	No. of Observations
ROCE	15.0964	16.40124	2.625862	15.13468	1400
ROA	9.763833	8.365774	0.578899	3.518016	1400
ROE	0.161519	0.315433	-9.02546	240.3256	1400

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.1 presents the descriptive statistics for the performance indicators ROCE, ROA and ROE, calculated for the entire sample of 100 companies. The mean value of Return on Capital Employed (ROCE) is 15.10, with a standard deviation of 16.40, indicating notable variability in the efficiency with which firms are utilising their capital to generate profits. The skewness of 2.63 suggests that ROCE is positively skewed, implying that most companies have ROCE values below the mean, while a few companies with high ROCE are pulling the average udpwards. Furthermore, the kurtosis of 15.13 signifies that ROCE is leptokurtic, meaning that some outliers exist in the data distribution.

Return on Assets (ROA) has a mean of 9.76 and a standard deviation of 8.37, indicating a more moderate spread around the average compared to ROCE. The skewness of 0.58 shows that ROA is only slightly positively skewed, with a relatively normal distribution. However, the kurtosis of 3.52, while less extreme than ROCE, still indicates a distribution with fatter tails, suggesting the presence of some outliers.

In contrast, the Return on Equity (ROE) exhibits a very different statistical profile. The mean ROE is 0.16, with a relatively low standard deviation of 0.32. However, the skewness of -9.03 highlights an extremely negative skew, suggesting that the majority of firms have ROE values clustered near zero or negative, with very few having high positive ROE. The kurtosis of 240.33 is extraordinarily high, indicative of a highly leptokurtic distribution, meaning that a significant number of outliers are present, possibly due to extreme losses/gains in equity returns.

These statistics indicate that the financial performance of firms, as measured by ROCE, ROA and ROE, varies considerably, with notable skewness and kurtosis. This suggests that the financial structure and profitability across firms may differ widely, which could have implications for further analyses of firm-level performance and financial behaviour in different sectors.

5.4.2 Descriptive Statistics of Key Factors Influencing Corporate Performance (All Companies)

This section outlines the descriptive statistics for the key influencing factors, including firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age. The analysis highlights the variability, skewness and kurtosis of these variables, revealing distinct patterns. These insights provide a foundation for understanding how firm-specific characteristics influence financial performance, offering a basis for deeper exploration of their roles in shaping corporate outcomes.

Table 5.2

Descriptive Statistics of Key Factors Influencing Corporate Performance (All Companies)

Variables	Mean	Standard Deviation	Skewness	Kurtosis	No. of Observations
Firm Size (Log)	5.33021	0.687919	-0.57892	3.929699	1400
Capital Structure	2.166807	1.479312	2.296139	28.17867	1400
Liquidity	0.000475	0.002896	19.16302	433.2963	1400
Tangibility of Assets	0.231296	0.159633	0.676701	3.006102	1400
Business Risk (Log)	3.7611	0.610774	0.014794	2.716004	1400
Growth Rate	0.205918	0.87639	16.03363	312.6461	1400
Firm Age	40.10809	1.479312	2.296139	28.17867	1400

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.2 summarises the descriptive statistics for the independent variables used in the analysis, including firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age.

The logarithm of firm size has a mean value of 5.33, with a standard deviation of 0.69. The skewness is slightly negative (-0.58), indicating that the firm size distribution is skewed to the left, with most companies being smaller, but a few larger firms pulling the distribution slightly. The kurtosis value of 3.93 is close to normal but suggests slightly heavier tails, indicating some firms with extreme sizes.

Capital structure, measured as a ratio of total debt to total assets, has a mean of 2.17 with a relatively high standard deviation of 1.48, showing considerable variability in how firms structure their debt. The skewness of 2.30 suggests a strong positive skew, indicating that many firms maintain lower debt levels, but a few firms are highly leveraged. The kurtosis of 28.18 indicates the presence of significant outliers, with extreme cases of firms having much higher leverage than the majority.

Liquidity, as measured by the Modified Turnover (MT) ratio, demonstrates an exceptionally low mean of 0.000475, with a corresponding standard deviation of 0.002896, indicating minimal liquidity levels across the sampled firms. The high skewness value of 19.16 reflects a significant right skew in the distribution, where the majority of firms maintain near-zero liquidity, while a small number of firms have much higher liquidity levels. Furthermore, the kurtosis value of 433.30 suggests a highly leptokurtic distribution, confirming the presence of extreme outliers in the liquidity data, which could be attributed to a few firms with unusually high trading volumes relative to their earnings volatility.

Tangibility of assets has a mean of 0.231 with a standard deviation of 0.16, indicating that on average, firms have a relatively low proportion of tangible assets. The skewness (0.68) is moderate and positive, suggesting that most firms hold lower levels of tangible assets, with some outliers on the higher end. The kurtosis is close to normal (3.00), indicating a reasonably normal distribution of tangibility.

Business risk, measured in logarithmic form, has a mean value of 3.76 with a standard deviation of 0.61 and the skewness (0.01) is close to zero, suggesting a symmetrical distribution of risk among firms. The kurtosis value of 2.72 is near the normal range, indicating no significant presence of outliers.

Growth rate has a mean of 0.21 with a standard deviation of 0.88, showing that there is considerable variation in growth performance among firms. The skewness of 16.03 indicates a heavy right skew, suggesting that while most firms exhibit low growth, some experience extremely high growth rates, significantly pulling up the average. The kurtosis of 312.65 highlights the presence of extreme outliers in firm growth rates, which may distort overall conclusions if not accounted for properly.

Firm age, with a mean of 40.11 years and a standard deviation of 1.48, reflects that the majority of companies in the sample are relatively well-established. Similar to capital structure, firm age exhibits a skewness of 2.30, indicating that while most firms are younger, a few older firms heavily skew the distribution. The kurtosis of 28.18 points to the presence of a few extreme outliers, with some firms being significantly older than the rest.

In summary, the independent variables display substantial variability, skewness and kurtosis, particularly in measures such as liquidity, growth rate and capital structure. These characteristics suggest that firms in the sample are heterogeneous in terms of financial structure, age and performance, with significant outliers that may have implications for subsequent analysis.

5.4.3 Mean Analysis of Performance Indicators and Key Influencing Factors: Sector-wise

This section presents a sector-wise mean analysis of performance indicators and the key influencing factors, such as, profitability indicators (ROCE, ROA, ROE), firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. By comparing these metrics across 10 different sectors, the analysis highlights sectoral disparities and unique financial characteristics. This comparison provides insights into how industry-specific factors influence financial performance and operational strategies, offering a deeper understanding of the diverse financial dynamics within the sample.

Table 5.3

Comparative Descriptive Statistics - Mean

	Mean										
Variables	**Overall Mean**	**Automobile Sector**	**FMCG Sector**	**Health Care Sector**	**IT Sector**	**Media Sector**	**Metal Sector**	**Pharma Sector**	**Realty Sector**	**Consumer Durables Sector**	**Oil & Gas Sector**
ROCE	15.0964	17.66779	34.86414	12.27557	25.52868	7.00688	7.424643	14.56336	4.738	16.1431	11.60229
ROA	9.763833	11.486	15.72279	9.773571	18.82809	4.66512	5.235643	11.54522	3.699571	9.395487	7.757714
ROE	0.161519	0.19004	0.358429	0.135314	0.253047	0.047162	0.038412	0.161223	0.073825	0.190373	0.154048
Firm Size (Log)	5.33021	5.586838	5.676464	5.499764	5.662864	4.480718	5.365385	5.467811	4.803141	4.947138	5.721089
Capital Structure	2.166807	1.957848	2.69201	1.621758	1.443161	1.994693	2.640354	1.595653	2.700353	2.3689	2.447761
Liquidity	0.000475	0.000721	0.000509	0.000365	0.000527	0.00018	0.000871	0.000297	0.000108	0.000536	0.000582
Tangibility of Assets	0.231296	0.221826	0.269233	0.258037	0.136382	0.230199	0.311636	0.251537	0.051677	0.213843	0.386554
Business Risk (Log)	3.7611	3.953956	3.865681	3.763756	4.129525	3.21125	4.233198	3.82945	3.237182	3.228193	4.346665
Growth Rate	0.205918	0.147524	0.128565	0.260042	0.317188	0.215375	0.264493	0.13736	0.322011	0.142698	0.14567
Firm Age	40.10809	43.1	57.7	36.9	29.14599	32.928	47.2	40.54478	35.2	46.47788	39.2

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.3 provides a comparative analysis of the mean values of key financial variables across 10 different sectors, including the overall mean for all 100 companies. This table allows for the examination of sectoral differences in financial performance and firm specific characteristics.

Corporate Performance Indicators (ROCE, ROA, ROE): Mean Analysis

Return on Capital Employed (ROCE) shows significant variation across sectors. The highest mean ROCE is observed in the FMCG sector (34.86), indicating strong capital efficiency, followed by the IT sector (25.53). The Automobile (17.67) and Oil & Gas (11.60) sectors also have higher-than-average ROCE. Conversely, the Realty sector (4.74) and Media sector (7.01) exhibit the lowest capital efficiency. The overall mean ROCE across all sectors is 15.10, indicating a moderate level of capital employed efficiency on average.

The Return on Assets (ROA) also demonstrates sectoral differences, with the IT sector showing the highest mean ROA (18.83), reflecting its ability to efficiently use its assets to generate profit. The FMCG (15.72) and Automobile (11.49) sectors follow. Sectors like Realty (3.70) and Media (4.67) show much lower asset efficiency. The overall ROA mean is 9.76.

In terms of Return on Equity (ROE), the FMCG sector leads (0.36), followed by the IT (0.25) and Automobile (0.19) sectors, indicating higher equity returns. The Media (0.05) and Metal (0.04) sectors have the lowest mean ROE values. The overall mean ROE stands at 0.16, which reflects moderate equity returns across the sample.

Key Factors Influencing Corporate Performance: Mean Analysis

This section analyses the sectoral variations in key influencing factors, including firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. The analysis reveals that firm size, a measure of company scale, is highest in the Oil & Gas sector (5.72), followed by FMCG (5.68) and IT (5.66), while the Media sector has the smallest firms on average (4.48). The overall mean firm size is 5.33, indicating moderate variation across sectors.

Capital structure, represented by the ratio of total debt to total equity, shows that the Realty (2.70) and FMCG (2.69) sectors rely heavily on debt financing. In contrast, the IT (1.44) and Pharma (1.60) sectors exhibit lower leverage. The overall mean capital structure is 2.17, highlighting sectoral disparities in debt reliance.

Liquidity, as measured by the Modified Turnover (MT) ratio, is generally low across sectors, with the Metal sector having the highest ratio (0.00087) and Realty the lowest (0.00011). The overall mean liquidity is 0.00048, reflecting limited trading activity in most sectors. Tangibility of assets varies significantly, with the Metal (0.31) and Oil & Gas (0.39) sectors showing the highest proportions of tangible assets, while Realty (0.05) and IT (0.14) sectors have the lowest. The overall mean tangibility is 0.23.

Business risk is highest in the Metal (4.23) and Oil & Gas (4.35) sectors, indicating greater exposure to financial volatility, while Realty (3.24), Consumer Durable (3.23) and Media (3.21) sectors show lower risk. The overall mean business risk is 3.76. Growth rates are led by the IT (0.32), Realty (0.32) and Metal (0.26) sectors, with the FMCG (0.13) and Pharma (0.14) sectors lagging. The overall mean growth rate is 0.21, reflecting moderate sales performance increases.

Finally, firm age varies widely, with the oldest firms in the FMCG (57.7 years) and Metal (47.2 years) sectors, while the youngest firms are in IT (29.15 years). The overall mean firm age is 40.11 years, suggesting a mix of established and newer firms across the sample.

In summary, the comparative analysis reveals substantial sectoral variations in profitability, firm size, capital structure, liquidity and growth. These differences highlight the unique financial characteristics of each sector, which are likely to have important implications for their performance and financial strategies.

5.4.4 Standard Deviation Analysis of Performance Indicators and Key Influencing Factors: Sector-wise

This section examines the sector-wise standard deviation of key financial variables, including profitability metrics (ROCE, ROA, ROE), influencing factors such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm

age. Standard deviation analysis highlights the variability within each sector, providing insights into the degree of dispersion around the mean values. By identifying sectors with higher or lower variability, this analysis offers a deeper understanding of the consistency and diversity in financial performance and firm characteristics across different industries.

Table 5.4

Comparative Descriptive Statistics - Standard Deviation

	Standard Deviation										
Variables	**Overall SD**	**Automobile Sector**	**FMCG Sector**	**Health Care Sector**	**IT Sector**	**Media Sector**	**Metal Sector**	**Pharma Sector**	**Realty Sector**	**Consumer Durables Sector**	**Oil & Gas Sector**
ROCE	16.40124	13.72223	31.9552	8.537431	9.450717	16.87271	8.694031	7.602794	3.92139	9.621841	6.399571
ROA	8.365774	7.981421	9.781522	6.754931	6.610439	10.65479	5.985612	5.936444	3.32866	5.001184	4.31095
ROE	0.315433	0.148902	0.363186	0.105018	0.095612	0.565829	0.637926	0.098539	0.053166	0.092604	0.076616
Firm Size (Log)	0.687919	0.452768	0.509629	0.382528	0.767913	0.7604	0.612009	0.394430	0.495444	0.534559	0.564257
Capital Structure	1.479312	0.625657	1.897032	0.397584	0.20493	2.300365	1.855965	0.350042	2.14463	0.921283	1.023467
Liquidity	0.002896	0.004817	0.002092	0.000822	0.00158	0.000539	0.006297	0.000723	0.000203	0.001704	0.002279
Tangibility of Assets	0.159633	0.095221	0.174619	0.114664	0.0854	0.193946	0.187874	0.106526	0.074132	0.138704	0.112186
Business Risk (Log)	0.610774	0.335064	0.405924	0.256517	0.624054	0.476212	0.532626	0.173689	0.365942	0.374394	0.552766
Growth Rate	0.87639	0.230821	0.142176	1.491657	1.659773	0.614937	1.159633	0.215731	0.887623	0.163349	0.258176
Firm Age	23.73171	20.83242	32.12447	17.58691	16.38442	18.66045	24.56359	19.61418	27.91101	21.13439	20.18839

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.4 presents the comparative standard deviation (SD) for various financial variables across different sectors, providing insights into the variability or dispersion within each sector. Standard deviation measures how much a variable deviates from its mean value, with higher values indicating greater volatility or diversity in the dataset.

Corporate Performance Indicators (ROCE, ROA, ROE): Standard Deviation Analysis

The standard deviation for Return on Capital Employed (ROCE) highlights substantial variability across sectors. The FMCG sector shows the highest variability (31.96), suggesting that firms in this sector have a wide range of capital efficiency. Media (16.87) and Automobile (13.72) sectors also show relatively high variability, indicating diverse performance across firms. On the other hand, the Realty sector (3.92) has the lowest standard deviation, indicating more consistent ROCE values across firms in this sector. The overall standard deviation for ROCE is 16.40, reflecting moderate variability across all sectors.

For Return on Assets (ROA), the Media sector (10.65) and FMCG sector (9.78) exhibit the highest volatility, whereas Realty (3.33) and Oil & Gas (4.31) sectors have the lowest, indicating more uniform asset efficiency among firms. The overall ROA standard deviation is 8.37, reflecting a moderate range of asset utilisation across all firms.

Return on Equity (ROE) exhibits the highest standard deviation in the Metal sector (0.64) and Media sector (0.57), showing significant variability in the returns generated for shareholders. On the contrary, sectors like Realty (0.05) and Oil & Gas (0.08) show much lower variability, indicating more consistent equity returns across firms. The overall ROE standard deviation is 0.32, which points to moderate variability in equity returns across the board.

Key Factors Influencing Corporate Performance: Standard Deviation Analysis

This section examines the variability of key firm-specific characteristics across sectors, highlighting differences in firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. The analysis reveals that firm size

shows relatively low variability overall, with the IT (0.77) and Media (0.76) sectors exhibiting the highest dispersion, suggesting more significant differences in firm scale within these industries. Conversely, the Automobile (0.45) and Health Care (0.38) sectors display more uniform firm sizes, with an overall standard deviation of 0.69.

Capital structure variability is most pronounced in the Media sector (2.30) and Realty sector (2.14), indicating substantial differences in leverage among firms in these industries. In contrast, the IT (0.20), Pharma (0.35) and Health Care (0.40) sectors demonstrate more consistent debt-to-equity ratios. The overall standard deviation for capital structure is 1.48, reflecting moderate sectoral differences in leverage.

Liquidity, measured by the Modified Turnover (MT) ratio, shows significant dispersion, particularly in the Metal sector (0.0063), indicating diverse trading activity. The Realty (0.0002) and Pharma (0.0007) sectors have the least variability, reflecting more uniform liquidity levels. The overall liquidity standard deviation is 0.0029. Asset tangibility displays similar variability patterns, with the Media (0.19) and Metal (0.19) sectors showing the highest differences in physical asset reliance. The Automobile (0.09) and Realty (0.07) sectors exhibit the least variability, with an overall tangibility standard deviation of 0.16.

Business risk varies widely, with the IT (0.62) and Oil & Gas (0.55) sectors experiencing the highest dispersion, indicating diverse risk profiles within these industries. On the other hand, the Pharma (0.17), Health Care (0.26) and Automobile (0.34) sectors demonstrate more consistent risk levels. The overall standard deviation for business risk is 0.61. Growth rate variability is highest in the IT (1.66) and Health Care (1.49) sectors, reflecting diverse sales trajectories influenced by market conditions and strategic decisions. In contrast, FMCG (0.14) and Consumer Durables (0.16) sectors show more consistent growth trends. The overall standard deviation for growth rate is 0.88.

Firm age shows the most significant variability in the FMCG sector (32.12), followed by Realty (27.91) and Metal (24.56), indicating a mix of older and younger firms. IT (16.38) and Pharma (19.61) sectors have more uniform firm ages. The overall standard deviation for firm age is 23.73, reflecting moderate dispersion across sectors.

In summary, the standard deviation analysis highlights significant variability in financial performance, capital structure and firm characteristics across different sectors. Sectors such as FMCG**,** Media and Metal tend to exhibit higher variability in several variables, indicating a broader range of firm performance and characteristics within these sectors. Conversely, sectors like Realty and Pharma show more consistency, with lower standard deviations across most variables.

5.4.5 Skewness Analysis of Performance Indicators and Key Influencing Factors: Sector-wise

This section explores the skewness of key financial variables across various sectors, providing insights into the asymmetry of their distributions. Skewness indicates whether data points tend to cluster around the mean or are spread out, with positive skewness reflecting a longer right tail and negative skewness indicating a longer left tail. By analysing skewness, this section highlights sectoral patterns, such as the prevalence of firms with extreme performance levels in profitability, firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age. This analysis helps to identify sectors with more uniform distributions versus those with significant outliers.

Table 5.5

Comparative Descriptive Statistics - Skewness

Skewness											
Variables	**Overall Skewness**	**Automobile Sector**	**FMCG Sector**	**Health Care Sector**	**IT Sector**	**Media Sector**	**Metal Sector**	**Pharma Sector**	**Realty Sector**	**Consumer Durables Sector**	**Oil & Gas Sector**
ROCE	2.625862	1.086518	1.266945	0.132873	0.669415	1.725057	1.274367	0.150812	1.785287	0.815717	0.045746
ROA	0.578899	0.539163	-0.00207	0.115203	0.578332	0.884693	1.229467	0.169875	2.210462	-0.119253	0.207799
ROE	-9.02546	0.232112	-0.17168	-0.770155	0.75504	0.168753	-10.52806	-1.150029	0.927353	-0.196037	-1.46612
Firm Size (Log)	-0.57892	-1.024737	0.089698	-0.287253	-0.251612	-0.76895	-1.218781	-0.30691	0.335127	0.17465	0.289862
Capital Structure	2.296139	1.04272	3.245048	1.020165	0.526348	0.176224	1.072165	0.956503	2.546816	1.100635	1.169794
Liquidity	19.16302	11.30882	10.12574	4.263959	5.755574	6.428652	11.34553	5.178484	3.060921	5.189032	6.559489
Tangibility of Assets	0.676701	-0.14985	0.980076	1.049144	2.180447	0.891118	0.043097	1.267116	2.25479	0.543345	0.020093
Business Risk (Log)	0.014794	-0.018926	0.888931	-0.900768	0.035302	-0.19403	-0.710107	-0.794372	0.491594	0.331917	-0.49635
Growth Rate	16.03363	0.459661	2.409384	11.30169	11.17982	4.38451	10.29527	3.293372	3.595591	-0.046595	0.502163
Firm Age	1.092653	0.115428	0.076359	1.407156	1.537985	0.918073	1.429114	1.005871	1.991957	0.678928	0.019176

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.5 presents the skewness of key financial variables across various sectors, offering insights into the asymmetry of the data distributions. Skewness measures the extent to which data deviates from a normal distribution, with positive values indicating a right-skewed distribution (longer tail on the right) and negative values indicating a left-skewed distribution (longer tail on the left).

Corporate Performance Indicators (ROCE, ROA, ROE): Skewness Analysis

Return on Capital Employed (ROCE) shows a positive skewness across all sectors, suggesting that the distribution of ROCE is right-skewed, with more firms clustered around lower ROCE values and a few firms showing very high ROCE. The overall ROCE skewness is 2.63, indicating a pronounced right skew across all companies. Sector-wise, Media (1.73), Realty (1.79) and Metal (1.27) sectors exhibit relatively high positive skewness, suggesting that most firms in these sectors have lower ROCE, while a few outliers have much higher returns. In contrast, the Health Care sector (0.13) and Oil & Gas (0.05) shows a near-normal distribution, with ROCE values more symmetrically distributed.

For Return on Assets (ROA), the overall skewness is 0.58, indicating a moderate right skew. The Realty sector (2.21) exhibits the most pronounced right skew, suggesting a wide gap between firms with low and high ROA in this sector. In contrast, the FMCG sector (-0.002) and Consumer Durables sector (-0.12) show almost no skewness or a slight left skew, indicating a more symmetric or slightly left-tailed distribution of ROA.

Return on Equity (ROE) presents a highly negative skewness overall (-9.03), driven by extreme values in sectors like Metal (-10.53), indicating that most firms in these sectors have low or negative ROE, with a few firms having extremely poor performance. Sectors like Automobile (0.23) and IT (0.76) show more balanced or right-skewed distributions, reflecting healthier equity returns overall.

Key Factors Influencing Corporate Performance: Skewness Analysis

This section analyses the skewness of key firm-specific characteristics across sectors, providing insights into the asymmetry of their distributions. Firm Size shows a slight

negative skewness overall (-0.58), suggesting that larger firms are more prevalent, with fewer extremely small firms. The Automobile (-1.02) and Metal (-1.22) sectors exhibit more pronounced left-skewed distributions, indicating a concentration of larger firms. In contrast, FMCG (0.09) and Realty (0.33) sectors show nearly symmetric or slightly right-skewed distributions, reflecting a more balanced spread of firm sizes.

Capital Structure demonstrates strong positive skewness overall (2.30), with the FMCG sector (3.25) having the highest skewness. This implies that most firms in this sector maintain low debt levels, but a few outliers exhibit very high leverage. Similarly, the Automobile (1.04) and Realty (2.55) sectors display significant positive skewness, while the IT sector (0.53) shows more moderate skewness, indicating relatively consistent capital structures.

Liquidity, measured by the Modified Turnover (MT) ratio, exhibits extreme positive skewness (19.16) across all sectors, reflecting that most firms have low trading activity, while a few experience much higher liquidity. The Metal (11.35) and Automobile (11.31) sectors have the highest skewness, suggesting that liquidity is concentrated among a few firms. Meanwhile, Realty (3.06) and Health Care (4.26) sectors display somewhat lower, yet still notable, skewness levels.

Tangibility of Assets shows an overall positive skewness (0.68), with IT (2.18) and Realty (2.25) sectors exhibiting the highest values. This indicates that while most firms in these sectors have low asset tangibility, some hold significantly higher proportions of tangible assets. Conversely, the Automobile sector (-0.15) displays a slight negative skew, implying a more even distribution of tangible assets.

Business Risk demonstrates a near-symmetric distribution overall (0.01), with some sectors deviating slightly. FMCG (0.89) and Realty (0.49) show moderate positive skewness, suggesting dominance of firms with lower risk, while Health Care (-0.90) and Metal (-0.71) sectors show moderate negative skewness, reflecting a higher concentration of firms with elevated risk profiles.

Growth Rate, reflecting sales growth percentage, shows extreme positive skewness overall (16.03). Health Care (11.30), IT (11.18) and Metal (10.30) sectors particularly exhibit this skew, driven by a few firms with exceptionally high growth rates. FMCG (2.41) and Pharma (3.29) sectors also show positive skewness, though to a lesser degree, indicating more consistent growth performance.

Firm Age has a moderate positive skewness overall (1.09), suggesting that most firms are older, with a few younger firms present. The Realty (1.99) and IT (1.54) sectors show higher skewness, indicating a larger proportion of newer firms. In contrast, the Automobile (0.12) FMCG (0.08) and Oil & Gas (0.02) sectors display near-symmetric distributions, reflecting a more uniform age distribution among firms.

This skewness analysis highlights the asymmetry in firm-specific characteristics, underscoring significant sectoral differences and the presence of outliers that impact the financial dynamics of these firms.

5.4.6 Kurtosis Analysis of Performance Indicators and Key Influencing Factors: Sector-wise

This section examines the kurtosis of key financial variables across sectors to assess the "tailedness" or extremity of their distributions. High kurtosis indicates a distribution with more frequent extreme values, while low kurtosis suggests fewer outliers. By analysing kurtosis, this section identifies sectors where financial variables like profitability, firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age exhibit significant outliers. These insights help in understanding the extent of variability and the presence of extreme performance or structural differences across firms in various sectors.

Table 5.6

Comparative Descriptive Statistics - Kurtosis

Kurtosis											
Variables	**Overall Kurtosis**	**Automobile Sector**	**FMCG Sector**	**Health Care Sector**	**IT Sector**	**Media Sector**	**Metal Sector**	**Pharma Sector**	**Realty Sector**	**Consumer Durables Sector**	**Oil & Gas Sector**
ROCE	15.13468	5.157632	4.110451	2.766841	2.951592	7.626757	5.294516	3.052597	8.96864	5.300872	2.860761
ROA	3.518016	3.81167	3.180771	2.814251	3.02131	3.398612	5.347902	3.159019	11.38638	3.309924	2.902122
ROE	240.3256	6.604601	7.217106	6.463563	4.283228	29.82966	119.0077	9.100676	9.453362	5.344681	12.35513
Firm Size (Log)	3.929699	4.0818	2.436982	3.179167	2.170255	2.750829	4.095688	3.090598	2.435114	3.109881	2.934878
Capital Structure	28.17867	3.315037	16.59337	3.508258	2.792078	22.48661	19.12731	3.639418	9.740924	3.604198	3.666266
Liquidity	433.2963	131.6304	110.7423	22.70031	41.37456	50.26921	131.6357	32.96456	13.10798	30.86983	49.88232
Tangibility of Assets	3.006102	2.050597	3.16633	3.914145	11.20209	3.255487	1.832924	4.691589	8.216788	2.420485	2.288624
Business Risk (Log)	2.716004	1.45537	2.677781	2.587799	1.645282	1.839626	2.419547	2.91481	1.830826	2.431185	2.179271
Growth Rate	312.6461	4.462856	12.97421	131.7035	128.1763	28.10115	116.2116	28.60267	21.54323	3.95126	2.781182
Firm Age	3.719644	1.845437	1.655342	4.778294	5.299793	2.744664	4.586013	2.836662	5.865499	2.128312	1.493871

Source: Data compiled by the researcher from CMIE ProwessIQ

Table 5.6 presents the kurtosis of key financial variables across sectors, offering insights into the distribution of data, particularly the presence of outliers. Kurtosis measures the "tailedness" of the data distribution, with higher values indicating distributions with heavy tails (extreme values or outliers) and lower values suggesting lighter tails.

Corporate Performance Indicators (ROCE, ROA, ROE): Kurtosis Analysis

Return on Capital Employed (ROCE) shows high overall kurtosis (15.13), indicating a leptokurtic distribution, where extreme values are more frequent than in a normal distribution. Sector-wise, the Realty sector (8.97) and Media sector (7.63) exhibit particularly high kurtosis, suggesting the presence of significant outliers, with a few firms exhibiting unusually high ROCE values. In contrast, sectors like Health Care (2.77) and Oil & Gas (2.86) have lower kurtosis, implying fewer extreme deviations from the average ROCE in these sectors.

Return on Assets (ROA) shows moderate kurtosis overall (3.52), suggesting a distribution with slightly heavier tails than normal. The Realty sector (11.39) stands out with extremely high kurtosis, indicating the presence of firms with exceptionally high or low ROA, while other sectors such as Metal (5.35) and Automobile (3.81) also show moderate kurtosis. The Health Care (2.81), Oil & Gas (2.90), IT (3.02) and FMCG (3.18) sectors show more modest kurtosis, indicating fewer extreme values in the distribution of ROA across these industries.

Return on Equity (ROE) exhibits the most extreme kurtosis overall (240.33), driven by severe outliers in the Metal sector (119.01). This suggests that ROE is highly concentrated around a central value for most firms, with a few outliers skewing the distribution drastically. Other sectors like Media (29.83), Oil & Gas (12.36), Pharma (9.45) and Pharma (9.10) also display relatively high kurtosis, reflecting greater variability in equity returns within these sectors. The Automobile (6.60) and FMCG (7.22) sectors show moderate kurtosis, indicating some presence of outliers but to a lesser extent.

Key Factors Influencing Corporate Performance: Kurtosis Analysis

This section analyses the kurtosis of firm-specific characteristics across sectors to identify the "tailedness" of their distributions and the presence of extreme values. Firm Size exhibits moderate kurtosis overall (3.93), indicating a distribution with some outliers. The Automobile (4.08) and Metal (4.10) sectors show slightly higher kurtosis, suggesting greater dispersion in firm sizes, while IT (2.17) and Realty (2.44) sectors exhibit lower kurtosis, indicating more evenly distributed firm sizes.

Capital Structure demonstrates very high kurtosis overall (28.18), driven by extreme outliers in the Media (22.49), Metal (19.13) and FMCG (16.59) sectors. This indicates that while most firms in these sectors maintain similar capital structures, a few firms exhibit significantly higher or lower leverage. Sectors like IT (2.79) and Automobile (3.31) show more moderate kurtosis, reflecting normal variations in capital structures.

Liquidity, measured by the Modified Turnover (MT) ratio, shows extreme kurtosis overall (433.30), with sectors like Automobile (131.63) and Metal (131.64) displaying highly peaked distributions due to a few firms with exceptionally high liquidity. Realty (13.11) and Health Care (22.70) sectors show lower but still significant kurtosis, indicating some outliers in trading activity and liquidity levels. Tangibility of Assets exhibits moderate kurtosis overall (3.01), with higher values in IT (11.20) and Realty (8.22), suggesting that a few firms in these sectors hold substantially more tangible assets. In contrast, Automobile (2.05) and Metal (1.83) sectors show more even distributions of tangible assets.

Business Risk displays low to moderate kurtosis overall (2.72), with FMCG (2.68) and Pharma (2.91) sectors showing higher kurtosis, reflecting some outliers with significantly higher or lower risk. Sectors like Automobile (1.46), IT (1.65), Realty (1.83) and Media (1.84) have lower kurtosis, indicating a more consistent distribution of business risk. The Growth Rate exhibits extreme kurtosis overall (312.65), with Health Care (131.70), IT (128.18) and Metal (116.21) sectors showing particularly high kurtosis due to a few firms achieving exceptionally high sales growth. FMCG (12.97), Realty (21.54) and Pharma (28.60) sectors display lower kurtosis but still indicate the presence of outliers.

Firm Age shows moderate kurtosis overall (3.72), with the Realty (5.87) and IT (5.30) sectors exhibiting higher values, indicating a mix of significantly old and young firms

influencing the distribution. Automobile (1.85), FMCG (1.66) and Oil & Gas (1.49) sectors exhibit lower kurtosis, suggesting a more even age distribution among firms. This kurtosis analysis highlights sectoral differences in the presence of outliers, providing insights into the variability and extremity of key influencing factors.

The analysis of descriptive statistics across the 100 companies reveals significant variability in financial performance and structure among sectors. Key financial metrics, including ROCE, ROA and ROE, demonstrate varying levels of profitability and efficiency, while factors such as firm size, capital structure and liquidity show considerable diversity across industries. The presence of skewness and kurtosis in many variables suggests the influence of outliers, particularly in terms of growth rate and liquidity, indicating that some firms face unique challenges or opportunities compared to the broader sample. The findings highlight the importance of understanding sector-specific financial dynamics, as firms in different industries exhibit distinct operational strategies and financial behaviours. Ultimately, this analysis provides valuable insights into the financial factors that influence corporate performance, offering a foundation for further research and strategic decision-making within and across sectors.

5.5 Correlation Analysis: All Companies

Correlation analysis is a fundamental statistical tool used to examine the strength and direction of relationships between key financial variables. In this analysis, the relationships among corporate performance indicators such as Return on Capital Employed (ROCE), Return on Assets (ROA), Return on Equity (ROE), as well as key factors influencing corporate performance like firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age, are evaluated. Understanding these correlations helps to reveal how certain variables may influence others and provides insights into the interconnectedness of financial performance, risk management and operational characteristics across firms. By identifying both strong and weak correlations, this analysis offers valuable insights into which factors have the most significant impact on firm performance and financial strategies. The data used in this analysis is drawn from a sample of 100 companies, across various sectors, ensuring a broad understanding of financial dynamics within the dataset.

Table 5.7

Correlation Matrix for All Companies

Variables	ROCE	ROA	ROE	Log Firm Size	Capital Structure	Liquidity	Tangibility of Assets	Log Business Risk	Growth Rate	Firm Age
ROCE	1.000000 - -									
ROA	0.855891 59.3499 0.0000***	1.000000 - -								
ROE	0.571986 25.00645 0.0000***	0.504151 20.93441 0.0000***	1.000000 - -							
Firm Size (Log)	0.278139 10.38403 0.0000***	0.355771 13.6514 0.0000***	0.183894 6.709004 0.0000***	1.000000 - -						
Capital Structure	-0.00529 -0.18981 0.8495	-0.245957 -9.099771 0.0000***	-0.02026 -0.72685 0.4675	-0.153705 -5.578273 0.0000***	1.000000 - -					

Variables	ROCE	ROA	ROE	Log Firm Size	Capital Structure	Liquidity	Tangibility of Assets	Log Business Risk	Growth Rate	Firm Age
	0.022898	0.003251	0.017568	0.006005	0.025795	1.000000				
Liquidity	0.821363	0.116601	0.630083	0.215365	0.925336	-				
	0.4116	0.9072	0.5288	0.8295	0.355	-				
	-0.05511	-0.081147	-0.04846	0.052367	0.121962	0.095115	1.000000			
Tangibility of Assets	-1.97936	-2.919618	-1.73992	1.880499	4.406574	3.426436	-			
	0.048**	0.0036***	0.0821*	0.0603*	0.0000***	0.0006***	-			
	0.165966	0.237744	0.075432	0.753297	-0.003995	0.028661	0.195216	1.000000		
Business Risk (Log)	6.035378	8.777363	2.712792	41.0745	-0.14325	1.028237	7.137933	-		
	0.0000***	0.0000***	0.0068***	0.0000***	0.8861	0.304	0.0000***	-		
	-0.0309	-0.031552	-0.01284	-0.02414	0.003985	0.007399	0.022905	-0.048482	1.000000	
Growth Rate	-1.10851	-1.132061	-0.46045	-0.865935	0.142903	0.265338	0.821611	-1.740665	-	
	0.2679	0.2578	0.6453	0.3867	0.8864	0.7908	0.4115	0.082*	-	
	0.118519	0.022436	0.08661	0.204489	0.030781	0.013098	0.076713	0.165396	-0.06834	1.000000
Firm Age	4.280361	0.804775	3.117637	7.491432	1.10435	0.469734	2.759122	6.014057	-2.45662	-
	0.0000***	0.4211	0.0019***	0.0000***	0.2696	0.6386	0.0059***	0.0000***	0.0142**	-

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
In each column, the first value represents the correlation coefficient, the second value is the t-value and the third value is the p-value.

Table 5.7 presents the correlation matrix for the financial variables such as corporate performance indicators (ROCE, ROA and ROE), as well as key factors influencing corporate performance (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) across all companies in the dataset. The results reveal important relationships between key financial performance indicators, capital structure and firm characteristics.

Return on Capital Employed (ROCE) exhibits a strong positive correlation with Return on Assets (ROA) (0.856), significant at the 1% level ($p < 0.0001$), indicating that firms with higher ROA tend to have higher ROCE. In addition, a moderate positive correlation (0.572) is observed between ROCE and Return on Equity (ROE), with a t-statistic of 25.01, also significant at the 1% level. Furthermore, ROCE shows significant correlations with variables such as Firm Size, Tangibility of Assets, Business Risk and Firm Age, highlighting their potential impact.

Return on Assets (ROA) in addition to its strong correlation with ROCE, demonstrates significant relationships with several key variables. It shows a moderate positive correlation with Firm Size (0.356, $p < 0.0001$), indicating that larger firms tend to achieve higher returns on assets. ROA also has a significant negative correlation with Capital Structure (-0.246, $p < 0.0001$), suggesting that firms with lower debt levels are more efficient in generating asset returns. Furthermore, ROA exhibits a weak but significant negative correlation with Tangibility of Assets (-0.081, $p = 0.0036$), implying that firms with fewer tangible assets may leverage intangible assets or operational efficiency to boost returns. Finally, its positive correlation with Business Risk (0.238, $p < 0.0001$) underscores the role of risk management in driving asset performance.

Return on Equity (ROE) exhibits moderate positive correlations with both ROCE (0.572, $p < 0.0001$) and ROA (0.504, $p < 0.0001$), indicating that higher operational and asset efficiencies contribute to improved equity returns. However, its relationships with other variables are generally weaker. For example, ROE has a weak but significant correlation with Firm Size (0.184, $p < 0.0001$) and a weaker, though significant, correlation with Business Risk (0.075, $p = 0.0068$), suggesting that these

factors play a limited but measurable role in influencing shareholder returns. Meanwhile, ROE shows slightly negative correlations with Capital Structure (-0.020, p = 0.467) and Tangibility of Assets (-0.048, p = 0.082), but these relationships are not statistically significant.

Firm Size shows significant positive correlations with several variables. For example, it is strongly correlated with Business Risk (0.753), which indicates that larger firms may face higher business risk. Moreover, Firm Size is positively related to Firm Age (0.204, $p < 0.001$), implying that older firms tend to be larger. However, Firm Size exhibits a negative correlation with Capital Structure (-0.154, $p < 0.0001$), suggesting that larger firms are less reliant on debt financing.

Capital Structure displays negative correlations with financial performance variables such as ROA (-0.246) and ROE (-0.020), reinforcing the notion that higher debt levels may negatively impact profitability. Interestingly, the relationship between Capital Structure and Tangibility of Assets is positive (0.122, $p < 0.001$), which could suggest that firms with more tangible assets have higher debt ratios. However, Capital Structure has a very weak relationship with Growth Rate (0.004), implying minimal interaction between leverage and firm growth.

Liquidity shows weak and mostly insignificant correlations with all other variables. For example, the correlation between Liquidity and ROCE is minimal (0.023) and the relationship with Firm Size is also weak (0.006). This suggests that liquidity does not play a major role in influencing profitability or firm characteristics in this sample. Given these weak associations, further investigation through panel data regression could help determine whether liquidity's influence varies over time or across different firm contexts, potentially uncovering subtle or lagged effects that are not apparent in simple correlations

Tangibility of Assets has significant but negative correlations with ROCE (-0.055) and ROA (-0.081), implying that firms with more tangible assets tend to have lower returns. However, it has a strong positive relationship with Capital Structure (0.122, $p < 0.0001$), suggesting that firms with higher levels of tangible assets may be more leveraged.

Business Risk is significantly correlated with Firm Size (0.753, $p < 0.0001$), which may indicate that larger firms face higher levels of business risk. However, its relationship with performance variables such as ROCE (0.166) and ROA (0.238) is relatively weaker, although still statistically significant. This could indicate that business risk does impact profitability, but the effect is not as pronounced.

Growth Rate shows weak and mostly insignificant correlations with the financial performance indicators. For example, the correlation with ROCE (-0.031) and ROA (-0.032) is negative but not statistically significant. This suggests that growth rate may not directly affect profitability in the short term. Growth Rate's relationships with other variables such as Firm Size and Capital Structure are also weak, suggesting minimal interaction.

Firm Age is positively correlated with Firm Size (0.204) and Business Risk (0.165), both significant at the 1% level, implying that older firms are generally larger and face higher business risk. Interestingly, Firm Age also shows a positive correlation with ROCE (0.119, $p < 0.0001$) and ROA (0.022), though the correlation with ROA is weak and insignificant, indicating that older firms may have better capital efficiency.

The analysis of descriptive statistics and correlation matrix strongly validates the research hypothesis that *key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age exhibit distinct distributional characteristics (averages, variability, skewness and kurtosis) and significant correlations that reflect sectoral differences in financial performance metrics (ROCE, ROA and ROE) among Indian non-financial companies.*

The descriptive statistics reveal significant sectoral disparities in financial performance indicators, with metrics like ROCE and ROA demonstrating pronounced variability and skewness, indicating differences in capital efficiency and asset utilisation across sectors. For instance, the FMCG and IT sectors exhibit higher profitability and efficiency, while sectors such as Realty and Media show more modest performance, with greater variability in operational outcomes.

Similarly, firm-specific attributes such as firm size, capital structure and tangibility of assets also display considerable variability across sectors. Larger firms in sectors like Oil & Gas and FMCG exhibit greater capital efficiency but rely less on debt, while smaller firms in the Realty and IT sectors demonstrate higher risk profiles. Skewness and kurtosis analyses further highlight the asymmetric distributions and the presence of outliers, particularly in variables like growth rate, liquidity and ROE, underscoring sector-specific financial dynamics and operational strategies.

The correlation analysis confirms that while some variables, such as firm size and business risk, have significant relationships with financial performance metrics, others, like liquidity and growth rate, exhibit weaker or insignificant associations. These findings indicate that sectoral and firm-level characteristics significantly influence financial outcomes, validating the hypothesis that these key variables shape distinct financial patterns across sectors.

In conclusion, the study's findings provide strong empirical support for the hypothesis by demonstrating the heterogeneity and sector-specific financial dynamics inherent in Indian non-financial companies. This comprehensive understanding of the statistical characteristics and relationships among key variables offers a valuable foundation for further sectoral analyses and strategic decision-making.

5.6 Panel Unit Root Test

Panel data involving large time dimensions requires testing for stationarity to ensure that regression results are not spurious. A panel unit root test is conducted to determine whether the variables under investigation, such as ROCE, ROA, ROE and other financial indicators, are stationary or contain a unit root. Stationarity implies that the statistical properties of the variables do not change over time, which is crucial for avoiding spurious results in econometric modelling. This test allows for the reliable use of these variables in further econometric analysis, ensuring the robustness of the results.

Table 5.8

Panel Unit Root Test: Summary

Method / Variables	Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat		ADF - Fisher Chi-square		PP - Fisher Chi-square	
	Statistic	**Prob.**	**Statistic**	**Prob.**	**Statistic**	**Prob.**	**Statistic**	**Prob.**
ROCE	-12.1314	0.0000***	-7.1607	0.0000***	377.826	0.0000***	367.439	0.0000***
ROA	-14.6277	0.0000***	-9.41873	0.0000***	433.071	0.0000***	397.157	0.0000***
ROE	-16.5315	0.0000***	-9.18466	0.0000***	410.171	0.0000***	386.191	0.0000***
Firm Size (Log)	-29.3661	0.0000***	-1.35208	0.0882*	218.524	0.0919*	233.052	0.0230**
Capital Structure	-18.2059	0.0000***	-6.48371	0.0000***	318.656	0.0000***	303.025	0.0000***
Liquidity	-12.4293	0.0000***	-7.24752	0.0000***	387.252	0.0000***	253.354	0.0000***
Tangibility of Assets	-6.63504	0.0000***	-1.16944	0.01***	229.809	0.0728*	246.357	0.0142**
Business Risk (Log)	-20.4356	0.0000***	-6.45241	0.0000***	342.913	0.0000***	286.269	0.0000***
Growth Rate	-142.672	0.0000***	-32.8101	0.0000***	792.599	0.0000***	828.680	0.0000***
Firm Age	-16.2426	0.0000***	-5.9053	0.0000***	432.657	0.0000***	452.527	0.0000***

Source: Data compiled by the researcher from CMIE ProwessIQ

*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*

Table 5.8 presents the results of panel unit root tests conducted on key financial variables to assess their stationarity. The tests determine whether the variables exhibit a unit root (non-stationary) or are stationary, which is critical for ensuring reliable econometric analysis in panel data settings. Four methods were employed for this evaluation: Levin, Lin & Chu t*, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square.

The results indicate that all selected variables, including ROCE, ROA, ROE, capital structure, growth rate and firm age, are stationary across all methods, with p-values significant at the 1% level ($p < 0.01$). These findings confirm that these variables do not exhibit unit roots and are stable over time, making them suitable for further econometric modelling and regression analyses.

Firm Size is found to be stationary at a 10% significance level under the Im, Pesaran and Shin W-stat ($p = 0.088$) and ADF-Fisher Chi-square ($p = 0.092$) methods, while achieving stronger significance at the 5% level under the PP-Fisher Chi-square method ($p = 0.023$). Similarly, Tangibility of Assets demonstrates stationarity at the 5% significance level under the PP-Fisher Chi-square method ($p = 0.014$), though it shows weaker significance under other methods.

The overall findings suggest that all key financial variables are stationary. This stationarity ensures that the data is suitable for solid econometric analyses, enabling further exploration of the relationships among financial performance indicators and firm-specific characteristics.

5.7 Empirical Analysis of Determinants of Corporate Performance Matrices

This section presents an empirical analysis of the determinants influencing key financial performance metrics, viz., Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE), across firms from various sectors. Using panel data methodologies, both Fixed Effect (FE) and Random Effect (RE) models are employed to capture the impact of key determinants such as firm size, capital

structure, liquidity, asset tangibility, business risk, growth rate and firm age, along with time-specific effects. The objective is to identify the significant predictors of corporate performance and to determine the most appropriate econometric model through rigorous statistical testing, including the Hausman test. The results offer valuable insights into how these variables shape financial outcomes, providing a foundation for strategic decision-making aimed at enhancing firm profitability and efficiency.

The White-Arellano estimator which is a robust covariance estimator for panel data has been used to account for cross sectional heteroskedasticity and serial correlation.

Research Objective 2:

To evaluate the influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE).

Research Hypothesis:

Key factors (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) significantly influence the financial performance metrics (ROCE, ROA and ROE) of Indian non-financial corporations

5.7.1 Determinants of ROCE

This section aims to investigate the determinants of Return on Capital Employed (ROCE) in companies across multiple sectors, using panel data models. ROCE is a critical measure of a firm's efficiency in generating profits from its capital investments, making it essential to identify the key factors influencing its variability. The study focuses on key variables such as firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age, as well as time-specific effects.

Proposed Empirical Models

The general form of the proposed empirical models is as follows:

- **Fixed Effect Model (FE)**

$$ROCE_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where;

- *i* represents the firm and *t* represents the time period.
- $ROCE_{it}$: The dependent variable, Return on Capital Employed, at firm *i* during time *t*.
- $\beta_1, \beta_2, \ldots\ldots\ldots\ldots \beta_7$: Coefficients representing the estimated effects of the independent variables on $ROCE_{it}$
- Firm Size_{it}: Log-transformed scale of the firm, reflecting its market presence and operational capacity.
- $\text{Capital Structure}_{it}$: Debt-to-equity ratio, capturing the leverage employed by the firm.
- Liquidity_{it}: Modified Turnover (MT) ratio, indicating stock liquidity by evaluating trading activity relative to outstanding shares and earnings volatility, reflecting how easily investors can trade.
- $\text{Tangibility of Assets}_{it}$: Proportion of tangible assets, showing the firm's reliance on physical assets for operations.
- $\text{Business Risk}_{it}$: Log-transformed measure of operational volatility, reflecting exposure to financial uncertainties.
- Growth Rate_{it}: Sales or revenue growth, reflecting market expansion potential.

- Firm Age_{it}: The operational lifespan of the firm, indicating maturity and stability.
- Dummy_{it}: A temporal dummy variable distinguishing between pre-2014 and post-2014 periods to capture the impact of regulatory and structural shifts.
- α_i represents the unobserved key determinants' effect and ε_{it} is idiosyncratic error

➢ **Random Effect Model (RE)**

$$ROCE_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

In the RE model, ν_i captures the random effects and assumed to be uncorrelated with the regressors.

In the context of panel data, the choice between fixed effects (FE) and random effects (RE) models is based on assumptions regarding the relationship between the error term and the independent variables. If the error term is independent of the independent variables, the RE model is preferred; otherwise, the FE model is employed. The Hausman test is commonly used to determine which model is more appropriate. This test compares the coefficients obtained from both the RE and FE models to assess potential bias in the estimates.

5.7.1.1 Correlated Random Effects - Hausman Test

To decide between these two models, the Correlated Random Effects - Hausman Test becomes crucial. The Hausman Test compares the consistency of the FE and RE models by examining whether the error term is correlated with the independent variables. If the test finds evidence of correlation, the FE model is preferred, as it provides consistent and unbiased estimates. Conversely, if no correlation is found, the RE model would be considered more efficient. The results of the Hausman test guide model selection, ensuring that the analysis reflects the most appropriate approach for understanding the determinants of ROCE.

Table 5.9

Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	38.332811	0.0000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level.*

In this analysis, as seen in table 5.9, the Hausman Test produced a Chi-Square statistic of 38.3328 with a p-value of 0.0000**.** This result is highly significant, indicating that the unobserved firm-specific effects are correlated with the independent variables. As a result, the null hypothesis that the RE model provides consistent estimates is rejected and the FE model is deemed more appropriate for this dataset.

5.7.1.2 Determinants of ROCE - Fixed Effect Model

This section presents the findings of the Fixed Effect (FE) model used to analyse the determinants of Return on Capital Employed (ROCE) across a sample of firms. The FE model is employed to account for unobserved firm-specific heterogeneity, ensuring more accurate and consistent estimates of the relationships between ROCE and various independent variables. By examining key financial factors, along with time-specific effects, the analysis aims to identify the most significant drivers of ROCE. The results provide critical insights into how these factors influence a firm's capital efficiency, supporting strategic decisions to optimise financial performance.

Table 5.10

Fixed Effect Model Results for Determinants of ROCE

Variables	Regression Coefficient	t-Statistic	Prob.
C	-2.737231	-0.49008	0.6242
Firm Size (Log)	9.488948	8.749397	0.0000***
Capital Structure	1.011767	3.837522	0.0001***
Liquidity	158.5086	1.773067	0.0765*
Tangibility of Assets	-24.18952	-7.352605	0.0000***
Business Risk (Log)	-0.326841	-0.185236	0.7583
Growth Rate	-0.084652	-0.218696	0.8269
Firm Age	-0.650779	-5.234662	0.0000***
Dummy	-2.377846	-2.502195	0.0125**
R-squared			0.736259
Adjusted R-squared			0.71283
F-statistic			31.42538
Prob(F-statistic)			0.000000***
Cross-section F			28.059987
Prob.			0.000000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*

Table 5.10 provides an analysis of the determinants of Return on Capital Employed (ROCE) using the Fixed Effects (FE) model. The model shows strong explanatory power, with an R-squared value of 73.6% and an Adjusted R-squared of 71.28%, indicating that the selected variables account for a substantial portion of the variation in ROCE across the sample of 100 firms (1,400 observations). An F-statistic of 31.43, with a p-value of 0.0000, further confirms the overall significance of the model.

The Redundant Fixed Effects Tests add robustness to the analysis, confirming that the inclusion of key determinants' effects is essential. The Cross-section F-statistic of 28.06 (p-value = 0.0000) suggests that unobserved key determinants significantly impact ROCE. This supports the use of the Fixed Effects model, as it effectively

controls for key determinants' heterogeneity, capturing effects not explained by the independent variables alone.

Notable Observations

1. *Firm Size:* This variable is highly significant at the 1% level ($p < 0.0000$), with a positive coefficient of 9.4889, indicating that larger firms tend to exhibit higher ROCE. This result aligns with the advantages of economies of scale and improved resource allocation among larger firms.

2. *Capital Structure:* The debt-equity ratio is significant at the 1% level ($p = 0.0001$), with a positive coefficient of 1.0118. This suggests that higher leverage enhances ROCE, consistent with the leverage effect, where firms with returns exceeding the cost of debt benefit from increased financial leverage.

3. *Liquidity:* Measured by the Modified Turnover (MT) ratio, which evaluates stock liquidity based on trading activity relative to outstanding shares and earnings volatility, has a positive coefficient of 158.5086 and is significant at the 10% level ($p = 0.0765$). This suggests that firms with higher stock liquidity, as reflected by the MT ratio, may achieve greater ROCE due to improved marketability of shares, facilitating efficient trading and attracting investor confidence.

4. *Tangibility of Assets:* The proportion of tangible assets has a negative coefficient of -24.1895 and is significant at the 1% level ($p < 0.0000$). This implies that firms with a higher proportion of tangible assets tend to have lower ROCE, potentially due to high maintenance costs and reduced operational flexibility.

5. *Firm Age:* Firm age demonstrates a negative coefficient of -0.6508 and is significant at the 1% level ($p < 0.0000$). Older firms are associated with lower ROCE, possibly due to declining operational efficiency or challenges related to aging infrastructure.

6. *Business Risk:* Business risk has an insignificant coefficient of -0.3268 ($p = 0.7583$), indicating no meaningful impact on ROCE within the dataset.

7. *Growth Rate:* Growth rate has an insignificant coefficient of -0.0847 (p = 0.8269), suggesting that it does not play a direct role in influencing ROCE.

8. *Dummy Variable:* The dummy variable, capturing time-specific effects, has a negative coefficient of -2.3778 and is significant at the 5% level (p = 0.0125). This negative coefficient shows a significant reduction in ROCE after 2014, possibly reflecting economic and regulatory changes during this period.

The Fixed Effect model, supported by the Redundant Fixed Effects Test, highlights firm size, capital structure, liquidity, tangibility of assets, firm age as significant determinants of ROCE. Larger firms and those with higher leverage and liquidity tend to achieve higher returns on capital, while firms with higher asset tangibility and older firms are more likely to experience lower ROCE. The inclusion of fixed effects underscores the importance of accounting for unobserved key determinants' heterogeneity, which significantly impacts ROCE. The analysis suggests that firms should focus on optimising their capital structure and liquidity, carefully managing their asset composition and addressing challenges associated with firm age. The strong model fit and the significance of firm-specific effects confirm the necessity of controlling for such heterogeneity in future analyses of ROCE determinants.

These findings emphasise that firm characteristics, such as firm size, capital structure and liquidity (measured by Modified Turnover), along with structural factors like asset tangibility and firm age, are integral in determining ROCE. The results underscore the importance of firms considering both internal attributes, such as the ability to scale operations, manage debt effectively and maintain liquidity and external factors, like industry-wide risks or time-specific influences (captured by the dummy variable), when optimising their returns on capital. The Fixed Effect model offers a robust framework for analysing these determinants of ROCE, providing valuable insights that can inform strategic decision-making to enhance firm performance.

5.7.2 Determinants of ROA

This section focuses on identifying the determinants of Return on Assets (ROA) in companies across various sectors, using panel data models. ROA is a key financial

metric that measures a company's ability to generate earnings relative to its assets, highlighting how efficiently management is utilising its assets to produce profits. Understanding the factors influencing ROA is critical for investors and stakeholders, as it reflects overall financial health and operational efficiency. The study examines financial variables, such as firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age, as well as time-specific effects.

Proposed Empirical Models

The general form of the empirical models for ROA analysis is as follows:

- **Fixed Effect Model (FE)**

$$ROA_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where α_i represents the unobserved key determinants' effect and ε_{it} is idiosyncratic error

- **Random Effect Model (RE)**

$$ROA_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

In the RE model, ν_i captures the random effects and assumed to be uncorrelated with the regressors.

In the context of panel data analysis for the variable ROA, the choice between fixed effects (FE) and random effects (RE) models similarly depends on the relationship between the error term and the independent variables. If the error term is independent of the independent variables, the RE model is preferred; otherwise, the FE model is more appropriate. To determine which model is suitable, the Hausman test is

conducted. This test compares the coefficients obtained from both the RE and FE models to detect any bias in the estimates.

5.7.2.1 Correlated Random Effects - Hausman Test

As with the analysis of ROCE, the Correlated Random Effects - Hausman test is essential in determining the most suitable model. The Hausman Test compares the consistency of the FE and RE models by examining whether the errors are correlated with the independent variables. If the test finds evidence of correlation, the FE model is preferred, as it provides consistent and unbiased estimates. Conversely, if no correlation is found, the RE model would be considered more efficient. The results of the Hausman test guide model selection, ensuring that the analysis reflects the most appropriate approach for understanding the determinants of ROA.

Table 5.11

Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	42.608827	0.0000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level.*

In this analysis, as seen in table 5.11, the Hausman Test results, with a Chi-Square statistic of 42.61 and a p-value of 0.0000**,** clearly reject the null hypothesis that the firm-specific effects are uncorrelated with the explanatory variables. This highly significant result suggests that the FE model is the better choice. The Hausman test underscores the importance of accounting for unobserved heterogeneity to avoid biases in the analysis of ROA.

5.7.2.2 Determinants of ROA - Fixed Effect Model

This section presents the results of the Fixed Effect (FE) model analysis, which explores the key determinants of Return on Assets (ROA) across a diverse sample of firms. ROA is a crucial measure of a firm's operational efficiency, reflecting its ability to generate earnings relative to its total assets. By accounting for key determinants' heterogeneity, the FE model provides robust estimates of the relationships between

ROA and various independent variables. The analysis also considers time-specific influences through the inclusion of a dummy variable. These findings aim to identify the most significant factors impacting ROA, offering actionable insights for firms to enhance their asset utilisation and overall financial performance.

Table 5.12

Fixed Effect Model Results for Determinants of ROA

Variables	Coefficient	t-Statistic	Prob.
C	-3.8326	-1.406699	0.1598
Firm Size (Log)	5.975696	11.33441	0.0000***
Capital Structure	-0.264738	-2.091008	0.0367**
Liquidity	59.75239	1.367046	0.1719
Tangibility of Assets	-8.635346	-5.415781	0.0000***
Business Risk (Log)	-0.073123	-0.056434	0.9367
Growth Rate	-0.113312	-0.598733	0.5495
Firm Age	-0.345992	-5.715765	0.0000***
Dummy	-1.478482	-3.182776	0.0015***
R-squared			0.747349
Adjusted R-squared			0.724925
F-statistic			33.32721
Prob(F-statistic)			0.000000***
Cross-section F			25.933847
Prob.			0.000000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level.*

The Fixed Effect (FE) model examines the determinants of Return on Assets (ROA) across a sample of 100 firms with a total of 1,400 observations. The model demonstrates strong explanatory power, as seen in table 5.12 with an R-squared of 74.73% and an Adjusted R-squared of 72.49%, indicating that the independent variables explain a substantial portion of the variation in ROA. The model's F-statistic of 33.33 (p-value = 0.0000) confirms the overall significance of the model. Moreover, the Redundant Fixed Effects Test (Cross-section F-statistic = 25.93, p-value = 0.0000)

shows that the firm-specific fixed effects are statistically significant, justifying the use of the FE model to account for key determinants' heterogeneity.

Significant Observations

1. *Firm Size:* This variable is highly significant at the 1% level ($p < 0.0000$), with a positive coefficient of 5.98. Larger firms tend to achieve higher ROA, likely benefiting from economies of scale, more efficient resource utilisation and competitive advantages associated with size.

2. *Capital Structure:* Capital structure, measured by the debt-equity ratio, is significant at the 5% level ($p = 0.0367$), with a negative coefficient of -0.26. This suggests that higher leverage tends to reduce ROA, possibly due to the increased financial burden of debt or a diminishing return on assets when liabilities grow.

3. *Tangibility of Assets:* Tangibility of assets has **a** negative and highly significant impact at the 1% level ($p < 0.0000$), with a coefficient of -8.64. Firms with a higher proportion of tangible assets generally have lower ROA, likely due to the high costs and reduced flexibility associated with maintaining physical assets.

4. *Firm Age:* Firm age is also highly significant at the 1% level ($p < 0.0000$), with a negative coefficient of -0.35. Older firms tend to exhibit lower ROA, potentially due to declining operational efficiency or outdated infrastructure.

5. *Liquidity,* measured by Modified Turnover, does not have a significant effect on ROA ($p = 0.1719$), suggesting that liquidity does not play a crucial role in influencing ROA in this sample.

6. *Business Risk* and *Growth Rate* are also not significant, with p-values of 0.9367 and 0.5495, respectively. These variables do not appear to directly affect ROA in the current analysis.

7. *Dummy Variable:* The dummy variable, representing time-specific effect, is significant at the 1% level ($p = 0.0015$), with a negative coefficient of -1.48. Negative coefficient suggests a significant reduction of ROA after 2014.

In conclusion, the analysis of the determinants of Return on Assets (ROA) using Fixed Effect (FE) model highlights the significance of firm size, capital structure, tangibility of assets and firm age as key variables influencing ROA. Larger firms consistently show higher ROA, while higher leverage, more tangible assets and older firms tend to experience lower ROA. This analysis provides important insights for firms aiming to optimise asset efficiency by managing their internal characteristics and accounting for external influences.

5.7.3 Determinants of ROE

This section aims to analyse the determinants of Return on Equity (ROE) in companies from various sectors, using panel data models. ROE is a critical performance indicator that measures the profitability generated from shareholders' equity, highlighting how effectively a company is utilising its equity base to generate profit. Understanding the key drivers of ROE is crucial for shareholders and investors, as it reflects a company's efficiency in managing its equity to produce returns. The analysis investigates several influencing variables, including firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age. In addition, time-specific effects are examined to understand its influence on ROE.

Proposed Empirical Models

The general form of the empirical models for ROE analysis is as follows:

- **Fixed Effect Model (FE)**

$$ROE_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where α_i represents the unobserved key determinants' effect and ε_{it} is idiosyncratic error

- **Random Effect Model (RE)**

$$ROE_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

In the RE model, ν_i captures the random effects and assumed to be uncorrelated with the regressors.

In the context of panel data analysis for the variable ROE, the choice between fixed effects (FE) and random effects (RE) models also depends on the relationship between the error term and the independent variables. If the error term is independent of the independent variables, the RE model is preferred; otherwise, the FE model is more appropriate. To determine the most suitable model, the Hausman test is performed. This test compares the coefficients obtained from both the RE and FE models to identify any potential bias in the estimates.

5.7.3.1 Correlated Random Effects - Hausman Test

As with the analysis of ROCE and ROA, the Correlated Random Effects - Hausman test has been applied here to decide between the Fixed Effect and Random Effect models. The Hausman test compares the consistency of the FE and RE models by examining whether the errors are correlated with the independent variables. If the test finds evidence of correlation, the FE model is preferred, as it provides consistent and unbiased estimates. Conversely, if no correlation is found, the RE model would be considered more efficient. The results of the Hausman test guide model selection, ensuring that the analysis reflects the most appropriate approach for understanding the determinants of ROE. The results are shown below;

Table 5.13

Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	25.530798	0.0006***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level.*

In this analysis, the Hausman Test results show a Chi-Square statistic of 25.53 and a p-value of 0.0006**,** which is highly significant. This result rejects the null hypothesis that the firm-specific effects are uncorrelated with the explanatory variables, indicating that the FE model is more appropriate. By selecting the FE model, this analysis ensures that firm-specific characteristics that remain constant over time but differ across firms are properly accounted for, leading to more reliable and unbiased estimates. The Hausman Test underscores the necessity of controlling for such firm-specific heterogeneity to avoid biased results when assessing the impact of financial variables on ROE.

5.7.3.2 Determinants of ROE - Fixed Effect Model

This section analyses the determinants of Return on Equity (ROE) using the Fixed Effect (FE) model, focusing on a sample of firms from various sectors. ROE is a critical financial metric that reflects a firm's efficiency in generating profits from its shareholders' equity. The FE model is employed to account for key determinants' heterogeneity, ensuring the accuracy of estimated relationships between ROE and key independent variables. Furthermore, time-specific effects are incorporated through a dummy variable to capture external influences. The analysis aims to identify the most significant drivers of ROE, offering insights into factors that can enhance equity returns and improve overall financial performance.

Table 5.14

Fixed Effect Model Results for Determinants of ROE

Variables	Coefficient	t-Statistic	Prob.
C	-0.047704	-0.261331	0.7939
Firm Size (Log)	0.14088	3.988344	0.0001***
Capital Structure	0.009177	1.081882	0.2795
Liquidity	1.791892	0.611887	0.5407
Tangibility of Assets	-0.424542	-3.974052	0.0001***
Business Risk (Log)	-0.078342	-2.038537	0.0489**
Growth Rate	0.001968	0.155232	0.8767
Firm Age	-0.011038	-2.721657	0.0066***
Dummy	0.00175	0.056233	0.9552
R-squared			0.265231
Adjusted R-squared			0.200014
F-statistic			4.066942
Prob(F-statistic)			0.000000***
Cross-section F			3.596964
Prob.			0.000000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level.*

The Fixed Effect (FE) model as seen in table 5.14 investigates the determinants of Return on Equity (ROE) across 100 firms, using 1,400 observations. This model explains a reasonable portion of the variance, with an R-squared of 26.52% and an Adjusted R-squared of 20.00%**.** The model's overall significance is confirmed by the F-statistic of 4.07 (p-value = 0.0000), indicating that the independent variables collectively explain ROE. In addition, the Redundant Fixed Effects Test (Cross-section F-statistic = 3.60, p-value = 0.0000) confirms the significance of firm-specific fixed effects, justifying the use of the FE model.

Key Observations

1. *Firm Size:* Firm size is highly significant at the 1% level (p = 0.0001), with a positive coefficient of 0.14. Larger firms tend to have higher ROE, potentially benefiting from economies of scale and better resource allocation.

2. *Tangibility of Assets:* Tangibility of assets has a negative and highly significant impact at the 1% level (p = 0.0001), with a coefficient of -0.42. Firms with a higher proportion of tangible assets tend to have lower ROE, likely due to the costs and inflexibility associated with maintaining physical assets.

3. *Business Risk*: Business risk shows a significant negative relationship at the 5% level (p = 0.0489), with a coefficient of -0.08. Firms with higher business risk generally experience lower ROE, possibly due to increased uncertainties and operational challenges.

4. *Firm Age*: Firm age is significant at the 1% level (p = 0.0066), with a negative coefficient of -0.01. Older firms tend to have lower ROE, which could be due to operational inefficiencies or ageing infrastructure.

5. *Capital Structure* (p = 0.2795), *Liquidity* (p = 0.5407), *Growth Rate* (p = 0.8767) and the *Dummy Variable* (p = 0.9552) do not show significant effects on ROE in this model. These variables do not appear to play a critical role in influencing ROE for the sample analysed.

The Fixed Effect model highlights firm size, tangibility of assets, business risk and firm age as significant determinants of ROE. Larger firms tend to have higher ROE, while firms with higher asset tangibility, greater business risk, or older firms are more likely to experience lower ROE. This analysis provides valuable insights for firms looking to improve their equity returns by focusing on optimal firm size, managing risks and reducing the impact of ageing infrastructure.

In conclusion, the analysis of the determinants of Return on Equity (ROE) using both Fixed Effect (FE) models highlights the significant role of firm size, tangibility of assets, business risk and external factors in influencing ROE. Larger firms tend to have higher ROE, while firms with higher tangible assets, greater business risk and those affected by negative external conditions generally experience lower ROE. The results from the Correlated Random Effects - Hausman Test confirm that the FE model is more appropriate, as unobserved influencing factors are correlated with key variables like firm size, capital structure, business risk, etc. This emphasises the

importance of controlling for key determinants' heterogeneity to ensure unbiased and reliable results in understanding how financial and structural factors impact ROE. These findings offer valuable insights for firms aiming to improve their equity returns by managing their size, risk and asset composition while considering external influences.

5.8 Key Determinants of Financial Performance: An Overview at a Glance

The following table 5.15 titled "Independent Variables' Impact on Firm Performance - A Snapshot" provides a comparative analysis of the effects of key financial and structural variables on three dependent financial performance metrics: Return on Capital Employed (ROCE)**,** Return on Assets (ROA) and Return on Equity (ROE)**.** The table highlights the direction and significance of each variable's impact based on results from Fixed Effect model. The table categorises each variable's influence as positive, negative, or insignificant, providing a clear summary of which factors are most critical in determining each performance metric. This summary allows for a quick comparison of how different financial and structural elements affect the efficiency and profitability of firms across various dimensions.

Table 5.15

Independent Variables' Impact on Firm Performance - A Snapshot

Variables	ROCE Impact	ROA Impact	ROE Impact
Firm Size (Log)	Positive ***	Positive ***	Positive ***
Capital Structure	Positive ***	Negative **	Not Significant
Liquidity	Positive *	Not Significant	Not Significant
Tangibility of Assets	Negative ***	Negative ***	Negative ***
Business Risk (Log)	Not Significant	Not Significant	Negative **
Growth Rate	Not Significant	Not Significant	Not Significant
Firm Age	Negative ***	Negative ***	Negative ***
Dummy Variable	Negative **	Negative ***	Not Significant

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*

The key variables, including firm size, capital structure, liquidity, tangibility of assets, business risk, growth rate and firm age, show varying degrees of significance and direction of influence across the three financial performance variables.

Significant Observations – Quick Overview

Firm size consistently shows a positive and highly significant impact on ROCE, ROA and ROE, indicating that larger firms tend to perform better across all three metrics.

Tangibility of assets has a strong negative influence on all three metrics, suggesting that firms with a higher proportion of tangible assets may experience lower returns.

Business risk negatively impacts ROE and is not significant for ROCE and ROA, indicating that higher risk correlates with lower equity returns.

Capital structure positively influences ROCE but has a negative effect on ROA, highlighting the complex impact of leverage on different performance metrics.

Liquidity shows a modest positive impact on ROCE but is not significant for ROA and ROE, suggesting that liquidity's influence may be more relevant for capital efficiency than asset or equity returns.

These insights help firms understand how different financial and structural variables impact their performance, enabling more informed strategic decisions.

Key Determinants of Financial Performance: An Overview - Graphical Presentation

This section provides a visual representation of the impact of key firm-specific variables on the performance metrics such as ROCE, ROA and ROE. The graphs highlight the direction and significance of each variable's influence, offering a concise and comparative overview of their effects on firm performance.

Figure 5.11

Key Determinants of ROCE, ROA and ROE: Graphical Representation

Source: Data compiled by the researcher from CMIE ProwessIQ

The visual graphs above depict the impact of key variables on ROCE, ROA and ROE based on the Fixed Effect and Random Effect models. Each bar represents the direction and significance of the variable's influence on the respective performance metrics, helping to visualise the different financial and structural factors that affect these key financial indicators.

- The first graph shows the impact on ROCE, with significant positive effects from firm size and capital structure, while tangibility of assets and firm age negatively influence ROCE.
- The second graph displays the impact on ROA, where firm size has a strong positive influence, but tangibility of assets and firm age have significant negative effects.
- The third graph presents the impact on ROE, showing that firm size positively affects ROE, while tangibility of assets and business risk negatively affect it.

5.9 Dummy Variable: Temporal Effect

To assess the significance of the temporal effect (dummy variable) in the analysis of firm performance, the dummy variable represents two periods: 2010-2014 as 0 and 2015-2023 as 1. This dummy variable allows us to capture any structural changes in the data across these two time periods. The significance of the dummy variable indicates whether the firm performance (in terms of ROCE, ROE, or ROE) experienced a statistically significant shift after 2014.

Table 5.16

Temporal Effects on Firm Performance (ROCE, ROA and ROE) – Fixed Effect Model Results

Variables	FE Coefficient	FE t-Statistic	FE p-Value
ROCE	-2.377846	-2.502195	0.0125**
ROA	-1.478482	-3.182776	0.0015***
ROE	0.001750	0.056233	0.9552

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level.*

For ROCE, the FE model reveals that the dummy variable is significant at the 5% level, with a negative coefficient, indicating a statistically significant reduction in capital efficiency after 2014. Similarly, for ROA, the dummy variable is highly significant at the 1% level, with a negative coefficient, showing a substantial decline in asset returns post-2014. However, for ROE, the FE model does not find the dummy variable statistically significant, suggesting that equity returns remained stable across the two periods.

In summary, the FE model identifies a notable decline in ROCE and ROA after 2014, while ROE appears unaffected by the temporal shift. This indicates that changes in the economic environment or sectoral dynamics post-2014 may have adversely impacted corporate performance, specifically in capital and asset efficiency.

The analysis confirms that *key factors, including firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age, significantly influence the financial performance metrics (ROCE, ROA and ROE) of Indian non-financial corporations*. Firm size consistently demonstrates a strong positive impact across all metrics, reflecting the advantages of economies of scale and operational efficiency. Capital structure positively influences ROCE, suggesting that leverage enhances capital efficiency when managed effectively, but negatively impacts ROA, indicating potential inefficiencies in asset utilisation at higher debt levels. Liquidity shows a modest positive effect on ROCE but remains insignificant for ROA and ROE, highlighting its limited role in profitability. Tangibility of assets has a consistently negative impact on all three metrics, suggesting that reliance on physical assets reduces financial flexibility and efficiency. Similarly, firm age negatively affects financial performance, likely due to operational challenges and aging infrastructure. Business risk negatively impacts ROE, reflecting the adverse effects of higher uncertainties on equity returns, while its influence on ROCE and ROA is insignificant. Growth rate shows no significant impact across the metrics, indicating limited direct influence on profitability. The temporal dummy variable reveals a decline in ROCE and ROA after 2014, possibly reflecting regulatory or structural changes, while ROE remains unaffected. Overall, the findings highlight the critical roles of firm size,

leverage, asset tangibility and firm age in shaping financial performance, providing practical insights for optimising corporate strategies to enhance profitability and efficiency.

5.10 Sectoral Analysis of Corporate Performance Determinants

This section presents a detailed sector-wise analysis of the determinants of corporate performance, focusing on three key financial metrics: Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). The study investigates the influence of various key determinants such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate, firm age and temporal shifts. By utilising secondary data from diverse sectors, this analysis aims to identify how these determinants shape financial outcomes across different industries. It also examines the differential impact of each variable on key financial matrices.

The analysis employs both Fixed Effect (FE) and Random Effect (RE) models to account for sector-specific characteristics. The selection of the appropriate model for each sector is guided by the Hausman test, ensuring robustness in capturing the underlying dynamics. This approach provides refined insights into the unique financial and operational influences within each sector, offering valuable guidance for stakeholders in crafting industry-specific strategies.

Research Objective 3:

To analyse the impact of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE) across different sectors.

Research Hypothesis:

The influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance metrics (ROCE, ROA and ROE) varies significantly across different sectors

Proposed Empirical Models

The general form of the empirical models for key performance indicators' analysis are as follows:

- **Fixed Effect Model (FE)**

$$ROCE_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

$$ROA_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

$$ROE_{it} = \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibility of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 Growth\ Rate_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \alpha_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (9)$$

Where α_i represents the unobserved key determinants' effect and ε_{it} is idiosyncratic error

- **Random Effect Model (RE)**

$$ROCE_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (10)$$

$$ROA_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (11)$$

$$ROE_{it} = \alpha + \beta_1 Firm\ Size_{it} + \beta_2 \text{Capital Structure}_{it} + \beta_3 \text{Liquidity}_{it} + \beta_4 \text{Tangibilty of Assets}_{it} + \beta_5 Business\ Risk_{it} + \beta_6 \text{Growth Rate}_{it} + \beta_7 \text{Firm Age}_{it} + Dummy_{it} + \nu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (12)$$

In the RE model, ν_i captures the random effects and assumed to be uncorrelated with the regressors.

Although these are the proposed models, the following section of this thesis will examine the impact of each key factors influencing corporate performance on the corporate performance indicators (ROCE, ROA and ROE) on a sectoral basis. The analyses will be presented in separate tables, accompanied by detailed explanations for each sector to provide comprehensive insights.

These models incorporate key variables, such as firm size, capital structure, liquidity, etc., which are hypothesised to have a significant influence on financial performance metrics. To determine the most suitable model for each sector, the Hausman test is applied, evaluating the correlation between the error term and the independent variables. In the context of panel data, the choice between Fixed Effect (FE) and Random Effect (RE) models depends on the underlying assumptions about the error term distribution. If the error term is independent of the explanatory variables, the RE model is preferred; otherwise, the FE model is more appropriate. The Hausman test facilitates this decision by comparing the coefficients generated by both models. To ensure robustness and transparency, we present the results from both FE and RE models, highlighting any potential bias in the estimates.

The White-Arellano estimator which is a robust covariance estimator for panel data has been used to account for cross sectional heteroskedasticity and serial correlation.

5.10.1 Correlated Random Effects - Hausman Test

In the context of panel data analysis, selecting between Fixed Effect (FE) and Random Effect (RE) models is crucial to ensure robust and unbiased results. The Hausman test serves as a diagnostic tool to determine the appropriate model by comparing the consistency and efficiency of the estimators. Specifically, the test assesses whether

the error term are correlated with the regressors. If no correlation exists, the RE model is preferred for its efficiency; otherwise, the FE model is selected due to its unbiased nature.

Table 5.17 presents the results of the Hausman test for each sector and performance metric (ROCE, ROA and ROE). The test statistics and corresponding p-values guide the model selection, ensuring that the analysis aligns with sector-specific data characteristics and provides reliable insights.

Table 5.17

Correlated Random Effects - Hausman Test

Sectors	Cross-section random - ROCE		Cross-section random - ROA		Cross-section random – ROE	
	Chi-Sq. Statistic	Prob.	Chi-Sq. Statistic	Prob.	Chi-Sq. Statistic	Prob.
Automobile	30.524354	0.0001***	40.508452	0.0000***	0.000000	1.0000
FMCG	159.32777	0.00000***	22.139337	0.0024***	38.726689	0.0000***
Healthcare	88.457114	0.00000***	75.380215	0.0000***	64.357442	0.0000***
IT	1.50725	0.98210	1.590748	0.9790	1.623077	0.9777
Media	115.02127	0.00000***	0.000000	1.0000	8.387055	0.2997
Metal	8.911792	0.25910	7.339769	0.3944	7.925689	0.3392
Pharma	18.694747	0.00920***	19.608209	0.0065***	19.590529	0.0065***
Realty	6.201379	0.51640	6.833043	0.4465	12.701108	0.0797*
Consumer Durables	46.935809	0.00000***	100.617389	0.0000***	55.829712	0.0000***
Oil & Gas	40.46807	0.00000***	40.310357	0.0000***	132.476686	0.0000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; * Significance at 10% level.*

Table 5.17 showcases the results of the Hausman test across multiple sectors, revealing insights into the choice of either the fixed effects (FE) or random effects (RE) model for evaluating return on capital employed (ROCE), return on assets (ROA) and return on equity (ROE). By interpreting the statistical significance of chi-squared values, this analysis aids in identifying the optimal model for each performance metric in diverse industry contexts.

In the automobile sector, significant chi-squared values for ROCE (30.524, $p < 0.001$) and ROA (40.508, $p < 0.001$) indicate that the FE model is best suited for these variables, capturing industry-specific effects. For ROE, however, the non-significant value (Chi-sq. 0.000, $p = 1.000$) suggests the RE model as a better fit, implying fewer sector-driven influences on equity returns.

For FMCG, robust significance across all metrics - ROCE (159.328, $p < 0.001$), ROA (22.139, $p = 0.002$) and ROE (38.727, $p < 0.001$) - supports the use of the FE model. This points to consistent, sector-specific factors impacting financial performance within FMCG.

In Healthcare, a similar pattern emerges with strong chi-squared values for ROCE (88.457, $p < 0.001$), ROA (75.380, $p < 0.001$) and ROE (64.357, $p < 0.001$), favouring the FE model across the board and highlighting the influence of underlying industry characteristics.

The IT sector, by contrast, reveals non-significant results across all performance metrics - ROCE (Chi-sq. 1.507, $p = 0.982$), ROA (Chi-sq. 1.591, $p = 0.979$) and ROE (Chi-sq. 1.623, $p = 0.978$). The RE model is thus ideal, suggesting minimal correlation with sector-specific unobserved factors.

Media presents a mixed case, with significant results for ROCE (Chi-sq. 115.021, $p < 0.001$) supporting the FE model, while non-significant values for ROA (Chi-sq. 0.000, $p = 1.000$) and ROE (Chi-sq. 8.387, $p = 0.300$) indicate the RE model is preferable for these two metrics.

For Metal, all metrics yield non-significant results - ROCE (Chi-sq. 8.912, $p = 0.259$), ROA (Chi-sq. 7.340, $p = 0.394$) and ROE (Chi-sq. 7.926, $p = 0.339$) - making the RE model the recommended choice for this sector, given the lack of strong correlation with unobserved sector-specific effects.

In Pharma, significant values for ROCE (Chi-sq. 18.695, $p = 0.009$), ROA (Chi-sq. 19.608, $p = 0.007$) and ROE (Chi-sq. 19.591, $p = 0.007$) favour the FE model, underscoring the substantial influence of unobserved factors within this industry.

The Realty sector results favour the RE model for ROCE (Chi-sq. 6.201, p = 0.516) and ROA (Chi-sq. 6.833, p = 0.447) due to non-significant values. However, ROE (Chi-sq. 12.701, p = 0.080) approaches significance at the 10% level, suggesting that the FE model might be selectively applied based on specific research objectives.

Finally, Consumer durables and Oil & Gas sectors exhibit strongly significant results across all performance metrics, reinforcing the FE model as ideal for capturing sector-specific influences. For consumer durables, ROCE (Chi-sq. 46.936), ROA (Chi-sq. 100.617) and ROE (Chi-sq. 55.830) are all significant at the 1% level and similarly, oil & gas shows substantial values for ROCE (Chi-sq. 40.468), ROA (Chi-sq. 40.310) and ROE (Chi-sq. 132.477), each at the 1% significance threshold.

In summary, the results highlight the varying impacts of sector-specific factors across industries, validating the importance of selecting the appropriate FE or RE model for accurately analysing financial performance in diverse contexts. This approach ensures that underlying sectoral influences are adequately captured, providing more refined insights into each industry's financial dynamics.

Sector-wise Impact of Independent Variables on Financial Performance Metrics

The following section provides a detailed analysis of the impact of each selected independent variable on the three dependent variables such as ROCE, ROA and ROE. The results are presented in separate tables for each variable, accompanied by comprehensive explanations to highlight sector-specific dynamics and their implications for corporate performance.

5.10.2 Firm Size Influence on Corporate Performance Metrics

This section examines the sector-specific impact of firm size on key performance metrics - ROCE, ROA and ROE - using Fixed and Random Effect models based on Hausman test. The findings reveal that firm size can have significant positive, negative, or no effects depending on the sector, highlighting the varying role of scale in driving corporate performance across industries.

Table 5.18

Sectoral Impact of Firm Size on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	17.56414	9.371796	0.180013#
	6.718195	6.800590	6.039887
	0.0000***	0.0000***	0.0000***
FMCG	21.89107	7.807790	-0.041214
	2.368388	2.640390	-0.324814
	0.0195**	0.0094***	0.7459
Healthcare	9.559729	7.291621	0.087109
	3.297114	-0.946529	2.109152
	0.0013***	0.3460	0.0373**
IT	4.763433#	3.581131#	0.054150#
	2.258324	2.581490	2.972959
	0.0258**	0.0111**	0.0036***
Media	18.05495	6.678699#	0.063532#
	5.631304	5.511476	0.569935
	0.0000***	0.0000***	0.5698
Metal	8.175086#	4.997436#	0.260454#
	5.552621	4.914317	2.175065
	0.0000***	0.0000***	0.0314**
Pharma	10.21420	8.140778	0.089497
	3.615030	3.641930	2.290404
	0.0004***	0.0004***	0.0238**
Realty	-1.947857#	-1.656846#	0.012986
	-1.235553	-1.256619	0.505667
	0.2191	0.2114	0.6141
Consumer Durables	14.66926	5.199168	0.108739
	4.036345	3.661102	2.855361
	0.0001***	0.0004***	0.0053***
Oil & Gas	1.851608	0.575641	-0.019765
	1.162141	0.599404	-0.823369
	0.2476	0.5501	0.4120

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The findings in Table 5.18 reveal a nuanced and sector-specific influence of firm size on corporate performance metrics such as ROCE, ROA and ROE. Firm size demonstrates statistically significant impacts across the Automobile, FMCG, Healthcare, IT, Media, Metal, Pharma and Consumer Durables sectors, with p-values largely below the 0.05 threshold, underscoring its critical role in shaping financial outcomes within these industries. Conversely, in the Realty and Oil & Gas sectors, the relationship between firm size and performance metrics is statistically insignificant, suggesting that other factors may have greater prominence in driving financial results in these industries.

In terms of the magnitude of impact, the regression coefficients reveal that the logarithm of firm size has a notably strong influence on ROCE and ROA in certain sectors. For instance, in the FMCG sector, a 1% increase in firm size (log-transformed) is associated with an absolute increase of approximately 0.219 (21.9 x 0.01) units in ROCE and 0.078 (7.8 x 0.01) units in ROA, underscoring a strong positive relationship between firm size and financial efficiency. Similarly, in the Media sector, the coefficients indicate that a 1% increase in firm size leads to an absolute improvement of 0.18 (18 x 0.01) units in ROCE and 0.067 (6.7 x 0.01) units in ROA, highlighting the significant advantages of scale within this industry.

In sectors such as IT and Metal, the coefficients, while statistically significant, indicate a more moderate impact. Here, a 1% increase in firm size corresponds to a 0.048 (4.8 x 0.01) unit and 0.082 (8.2 x 0.01) unit rise in ROCE, respectively, reflecting a less pronounced yet meaningful influence of size. This variance across sectors underscores the complex role of firm size, suggesting that while larger firms in certain industries gain substantial performance advantages, in others, the benefits are comparatively modest. Such insights emphasise the need for sector-specific strategic considerations in performance analysis and highlight the differential importance of firm size across industries.

5.10.3 Influence of Capital Structure on Corporate Performance Metrics

This section examines the sector-specific impact of capital structure on key corporate performance metrics - ROCE, ROA and ROE - using Fixed and Random Effect models based on Hausman test. It highlights the variability in how leverage influences

financial performance across industries, emphasising the importance of tailored, sector-specific capital structure strategies to optimise corporate performance.

Table 5.19

Sectoral Impact of Capital Structure on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	3.489392	-1.479728	0.027356#
	1.690484	-1.360007	1.212692
	0.0935*	0.1763	0.2274
FMCG	3.294088	-0.808328	0.079302
	1.859909	-1.426588	3.261719
	0.0654*	0.1564	0.0015***
Healthcare	-4.894171	-5.370850	-0.054682
	-2.390718	-3.276379	-1.875197
	0.0186**	0.0014***	0.0635*
IT	2.861387#	-2.602370#	0.128873#
	0.883128	-1.235552	4.669526
	0.3790	0.2191	0.0000***
Media	0.883801	-0.202464#	0.016845#
	1.888624	-0.915771	0.742348
	0.0616*	0.3617	0.4594
Metal	-0.172642#	-0.139532#	-0.045627#
	-0.536883	-0.628117	-1.444190
	0.5923	0.5310	0.1511
Pharma	-11.53834	-10.58934	-0.129243
	-4.690089	-5.440820	-3.798762
	0.0000***	0.0000***	0.0002***
Realty	-0.813515#	-0.961043#	0.005435
	-1.631155	-2.308707	0.720825
	0.1055	0.0227**	0.4726
Consumer Durables	-4.828009	-3.707620	-0.005570
	-3.124599	-6.140719	-0.343993
	0.0024***	0.0000***	0.7316
Oil & Gas	-9.608486	-6.416641	-0.150967
	-9.121682	-10.10614	-9.512285
	0.0000***	0.0000***	0.0000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis of Table 5.19 reveals a sector-wise assessment of the impact of capital structure on corporate performance metric - ROCE, ROA and ROE. Notably, the capital structure has a statistically significant effect on at least one of the performance metrics across several sectors, such as FMCG, Healthcare, Media, Pharma, Consumer Durables and Oil & Gas, with p-values indicating strong significance (typically $p < 0.05$). In contrast, sectors like Automobile, IT, Metal and Realty show limited or mixed significance across performance metrics, suggesting that capital structure plays a more nuanced role in these industries.

Examining the magnitude of influence, as indicated by regression coefficients, certain sectors experience a pronounced impact of capital structure. In the Oil & Gas sector, for instance, a 1-unit increase in leverage is associated with a substantial decline in ROCE by approximately 9.6 unit and ROA by 6.4 unit, underscoring the sensitivity of this sector to capital structure changes. Similarly, in the Pharma sector, high negative coefficients for ROCE (-11.5) and ROA (-10.6) highlight the considerable impact of capital structure decisions on profitability and efficiency. Conversely, in sectors such as FMCG and Media, while capital structure significantly affects certain metrics like ROE, the impact on ROCE and ROA remains more modest, with coefficients closer to zero, indicating a less pronounced effect.

These findings illustrate the diverse role of capital structure across industries. In capital-intensive sectors like Oil & Gas and Pharma, where high leverage appears to have a marked adverse effect, financial strategies need to be carefully managed to optimise performance. In contrast, sectors with lower coefficients, such as Media and FMCG, demonstrate that capital structure adjustments have a relatively moderate influence, suggesting more flexibility in leveraging capital without significant performance drawbacks. This sectoral variation underscores the importance of tailoring financial strategies to align with industry-specific capital structure sensitivities.

5.10.4 Impact of Liquidity on Corporate Performance Metrics

This section explores the sector-specific impact of liquidity on key corporate performance metrics - ROCE, ROA and ROE - utilising Fixed and Random Effect models based on Hausman test. It underscores the diverse ways in which liquidity

affects financial performance across industries, highlighting the need for customised, sector-specific liquidity management strategies to enhance corporate outcomes.

Table 5.20

Impact of Liquidity on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	98.27653	71.36043	0.662570#
	0.850001	1.170914	0.492128
	0.3970	0.2439	0.6235
FMCG	1068.811	75.42187	4.498180
	1.564929	0.345180	0.479771
	0.1203	0.7306	0.6323
Healthcare	1205.358	992.6250	12.06291
	1.955325	2.010897	1.373763
	0.0532*	0.0469**	0.1724
IT	-35.20575#	-1.615998#	-1.868827#
	-0.117724	-0.008345	-0.736967
	0.9065	0.9934	0.4626
Media	2625.558	857.9272#	160.3228#
	1.303983	0.869815	1.589172
	0.1950	0.3862	0.1147
Metal	7.192522#	4.203992#	0.972747#
	0.086281	0.073000	0.114113
	0.9314	0.9419	0.9093
Pharma	1216.356	1038.135	12.95407
	1.838918	1.983870	1.416135
	0.0685*	0.0496**	0.1594
Realty	2050.040#	1064.261#	33.55098
	1.163383	0.721977	1.433618
	0.2470	0.4717	0.1545
Consumer Durables	245.1559	110.4365	-0.392782
	0.646920	0.745794	-0.098913
	0.5192	0.4576	0.9214
Oil & Gas	94.46167	16.97016	1.501944
	0.693386	0.206663	0.731737
	0.4895	0.8366	0.4658

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: ** Significance at 5% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis of Table 5.20 provides insights into the impact of liquidity on corporate performance metrics - ROCE, ROA and ROE - across various sectors, revealing significant variations in how liquidity influences these metrics. Notably, liquidity has a statistically significant effect in sectors such as Healthcare and Pharma, with p-values below conventional significance levels ($p < 0.05$), particularly for ROCE and ROA. In contrast, the Automobile, IT, Media, Metal, Consumer Durables and Oil & Gas sectors show no significant influence of liquidity on any of the performance metrics, suggesting a limited role of liquidity in shaping financial outcomes within these industries.

Considering the regression coefficients, the Healthcare sector shows a high impact of liquidity, as measured by the Modified Turnover (MT) ratio, on ROCE and ROA, with coefficients of 1205.4 and 992.6, respectively. This indicates that an increase in MT, which reflects stock liquidity based on trading activity relative to outstanding shares and earnings volatility, is associated with substantial improvements in capital and asset efficiency. Similarly, the Pharma sector exhibits relatively high coefficients for ROCE (1216.4) and ROA (1038.1), reinforcing the positive influence of MT in supporting performance, particularly in capital-intensive industries where the ability of investors to trade easily enhances operational flexibility and resource allocation.

Conversely, in sectors like IT and Metal, the coefficients are much lower and the statistical insignificance suggests that variations in MT have a limited impact on financial performance, reflecting a reduced reliance on stock liquidity in these industries. These findings underscore the sector-specific importance of liquidity, highlighting that sectors such as Healthcare and Pharma, with greater sensitivity to MT, benefit significantly from enhanced trading activity and reduced earnings volatility. Meanwhile, sectors like IT and Media demonstrate minimal dependency on liquidity as measured by MT. This variability emphasises the need for tailored liquidity management strategies, particularly in industries where trading activity and investor confidence play a crucial role in financial outcomes.

5.10.5 Impact of Asset Tangibility on Corporate Performance Metrics

This section evaluates the sector-specific impact of asset tangibility on corporate performance metrics - ROCE, ROA and ROE - using Fixed and Random Effect

models based on Hausman test. The analysis explores how variations in the proportion of tangible assets influence financial performance across industries, with some sectors benefiting from increased tangibility while others face performance challenges. These findings highlight the need for industry-specific strategies to effectively manage asset tangibility and enhance financial outcomes.

Table 5.21

Impact of Asset Tangibility on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	25.08370 1.976405 0.0503*	19.66843 2.940031 0.0039***	0.358736# 2.596858 0.0105**
FMCG	-73.87244 -5.216511 0.0000***	-19.71721 -4.352086 0.0000***	-0.808541 -4.159139 0.0001***
Healthcare	-7.311239 -0.884663 0.3783	-1.702900 -0.257323 0.7974	0.000856 0.007274 0.9942
IT	-6.750670# -0.798404 0.4263	-0.095384# -0.017350 0.9862	0.032079# 0.445303 0.6569
Media	-61.73046 -5.751022 0.0000***	-14.74403# -4.440173 0.0000***	-0.382527# -1.317309 0.1903
Metal	-9.711712# -1.603406 0.1113	-8.027930# -1.919521 0.0571*	-0.384010# -1.070984 0.2862
Pharma	-3.463116 -0.459009 0.6471	0.546740 0.091600 0.9272	0.054956 0.526701 0.5994
Realty	-4.782246# -0.777411 0.4385	-4.442308# -0.863630 0.3896	-0.107046 -1.288027 0.2005

Sectors	ROCE	ROA	ROE
Consumer Durables	4.847769	-3.826263	0.012088
	0.453380	-0.915785	0.107888
	0.6513	0.3621	0.9143
Oil & Gas	-11.65219	-7.473079	-0.207456
	-2.360464	-2.511579	-2.789322
	0.0200**	0.0134**	0.0062***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis in Table 5.21 examines the influence of asset tangibility on corporate performance indicators such as ROCE, ROA and ROE across various sectors, revealing significant variations in how tangible assets impact financial outcomes. Asset tangibility demonstrates a statistically significant effect on performance metrics in sectors like Automobile, FMCG, Media and Oil & Gas, with p-values generally below 0.05. In contrast, sectors such as Healthcare, IT, Pharma, Realty and Consumer Durables exhibit largely insignificant impacts, suggesting minimal influence on financial performance in these industries.

In terms of ROCE and ROA, the Automobile sector shows substantial positive impacts, with a 1-unit increase in asset tangibility associated with a 25.1-unit rise in ROCE and a 19.7-unit improvement in ROA, highlighting the essential role of tangible assets in enhancing efficiency. However, ROE in the Automobile sector also shows a statistically significant positive effect (coefficient: 0.36, $p < 0.05$), suggesting that asset tangibility enhances equity returns in this sector.

Conversely, FMCG and Media sectors demonstrate high negative coefficients for all three performance metrics. For instance, ROCE decreases by -73.9 units in FMCG and -61.7 units in Media, while ROA declines by -19.72 and -14.74 units, respectively. This suggests that greater asset tangibility in these sectors ties up capital in physical assets, leading to reduced profitability and efficiency.

These findings highlight the diverse impact of asset tangibility across sectors. Capital-intensive industries like Automobile benefit from higher tangibility due to their reliance on physical assets for operational efficiency, resulting in improved returns across all metrics. However, in FMCG and Media, high tangibility appears to hinder financial performance, likely due to maintenance costs and lower returns from physical assets. This variability underscores the importance of sector-specific asset management strategies to optimise corporate performance and align with industry dynamics.

5.10.6 Influence of Business Risk on Corporate Performance Metrics

This section investigates the sector-specific impact of business risk on corporate performance metrics - ROCE, ROA and ROE - using Fixed and Random Effect models based on Hausman test. The analysis highlights how varying levels of risk influence financial performance across industries, with some sectors showing significant sensitivity to risk, while others remain relatively unaffected. These findings emphasise the importance of tailoring risk management strategies to align with the unique risk profiles and performance dynamics of each sector.

Table 5.22

Sectoral Impact of Business Risk on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	-5.102259	-1.894316	-0.123057#
	-0.497146	-0.596428	-1.533389
	0.5214	0.6325	0.1276
FMCG	-51.42839	-2.035789	-0.309821
	-6.742764	-0.308329	-3.091938
	0.0000***	0.6935	0.0297**
Healthcare	11.01325	7.973643	0.201739
	2.982573	3.015849	2.684328
	0.0047***	0.0059***	0.0229**
IT	4.330667#	3.181016#	0.029822#
	1.032103	1.076052	0.759727
	0.3042	0.2841	0.4490

Sectors	ROCE	ROA	ROE
Media	0.608248	-1.512684#	-0.019169#
	0.219273	-0.750813	-0.111931
	0.9025	0.4543	0.9111
Metal	-4.706106#	-2.207649#	-0.040058#
	-1.084030	-0.737993	-0.268199
	0.2804	0.4619	0.7890
Pharma	-30.46527	-24.54762	-0.405329
	-3.087182	-3.083569	-1.982526
	0.0057***	0.0068***	0.0087***
Realty	3.340626#	2.649093#	0.028357
	1.314295	1.254868	0.784643
	0.1913	0.2120	0.4036
Consumer Durables	6.0132649	4.025328	0.095894
	1.982576	2.984153	3.682736
	0.0472**	0.0042***	0.0007***
Oil & Gas	-5.989357	-4.993684	-0.068156
	-3.012521	-3.4932534	-2.985386
	0.0072***	0.0000***	0.0039***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis in Table 5.22 explores the sector-wise impact of business risk on corporate performance metrics such as ROCE, ROA and ROE highlighting variations based on Fixed Effect (FE) and Random Effect (RE) model results. Business risk demonstrates a statistically significant effect in sectors such as FMCG, Healthcare, Pharma, Consumer Durables and Oil & Gas (p-values < 0.05), underscoring its critical influence on financial performance in these industries. In contrast, sectors like Automobile, IT, Media, Metal and Realty show largely insignificant impacts, suggesting a neutral or resilient response to business risk.

For ROCE and ROA, Healthcare and Consumer Durables show positive coefficients in the FE model. In Healthcare, a 1% increase in business risk corresponds to a 0.11 (11 x 0.01) unit rise in ROCE and a 0.08 (8 x 0.01) unit increase in ROA, reflecting the ability to leverage calculated risks for enhanced efficiency. Similarly, Consumer Durables sees increases of 0.06 (6 x 0.01) units in ROCE and 0.04 (4 x 0.01) units in ROA, indicating that innovation-driven risk-taking supports financial performance.

Conversely, sectors such as Pharma and Oil & Gas show consistent negative impacts across all metrics, including results from both FE and RE models. For example, Pharma's ROCE declines by -0.305 (-30.5 x 0.01) units and ROA by -0.2455 (-24.55 x 0.01) units, reflecting its vulnerability to market volatility and regulatory challenges. Oil & Gas demonstrates declines in ROCE (-0.059 units), ROA (-0.05 units) and ROE (-0.0007 units), highlighting the sector's susceptibility to external shocks.

FMCG presents notable negative effects under the FE model, with a -0.514 (-51.4 x 0.01) unit decline in ROCE and a -0.0031 unit decrease in ROE, suggesting the importance of cautious risk management in this sector to maintain capital efficiency.

These findings highlight the sector-specific dynamics of risk management. Industries such as Healthcare and Consumer Durables benefit from calculated risk-taking to improve performance, whereas Pharma, Oil & Gas and FMCG require robust mitigation strategies to counter adverse effects. The distinctions between FE and RE models emphasise the importance of selecting appropriate methodologies to capture sectoral variations and guide tailored corporate strategies.

5.10.7 Impact of Growth Rate on Corporate Performance Metrics

This section examines how growth rate affects corporate performance metrics - ROCE, ROA and ROE - across different sectors, using Fixed and Random Effect models based on Hausman test. The analysis shows that the impact of growth rate varies by industry, with some sectors showing strong positive effects while others have little or no significant relationship. These findings highlight the need for sector-specific growth strategies to improve financial performance.

Table 5.23

Impact of Growth Rate on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	11.75394	6.615245	0.138928#
	4.547417	4.855403	4.661711
	0.0000***	0.0000***	0.0000***
FMCG	35.07924	15.31225	0.554434
	2.860717	3.903174	3.293655
	0.0050***	0.0002***	0.0013***
Healthcare	-0.341606	-0.280959	-0.004563
	-0.921539	-0.946529	-0.864189
	0.3589	0.3460	0.3894
IT	10.65763#	6.980271#	0.066967#
	4.835296	4.888534	3.580988
	0.0000***	0.0000***	0.0005***
Media	-1.958949	-0.824282#	-0.034574#
	-1.122062	-0.958643	-0.392488
	0.2643	0.3397	0.6954
Metal	-0.308105#	-0.314631#	0.011958#
	-0.678431	-1.002869	0.261843
	0.4987	0.3178	0.7939
Pharma	3.043727	2.410750	0.058385
	1.393926	1.395546	1.933436
	0.1660	0.1655	0.0556
Realty	0.102824#	0.061924#	0.000526
	0.262404	0.188807	0.102564
	0.7935	0.8506	0.9185
Consumer Durables	13.20208	7.303843	0.179286
	3.203216	4.535164	4.151305
	0.0018***	0.0000***	0.0001***
Oil & Gas	2.547052	1.357950	0.033797
	1.843091	1.630235	1.623195
	0.0679*	0.1058	0.1073

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

Table 5.23 offers a comprehensive analysis of the sectoral impact of growth rate on corporate performance metrics - ROCE, ROA and ROE. The results highlight a significant and positive relationship in sectors such as Automobile, FMCG, IT and Consumer Durables, where growth rate serves as a critical driver of financial performance, as indicated by p-values below 0.05. Conversely, sectors like Media, Metal, Realty and Pharma exhibit a weak or insignificant relationship, suggesting that growth rate may not be a primary determinant of financial outcomes in these industries.

The magnitude of impact, as revealed by regression coefficients, is particularly striking in the FMCG sector, where a 1-unit increase in growth rate is associated with a 35.1 unit rise in ROCE, a 15.3 unit improvement in ROA and a 0.55 unit increase in ROE. This underscores the sector's sensitivity to growth, likely driven by its dynamic market conditions and consumer demand. Similarly, in the Automobile and IT sectors, growth significantly boosts ROCE and ROA, with coefficients of 11.8 unit and 10.7 unit for ROCE, respectively, reflecting the crucial role of expansion strategies in enhancing capital and asset efficiency.

Interestingly, while the Pharma and Oil & Gas sectors show lower coefficients, their growth rate's impact remains marginally significant, indicating that growth strategies still influence performance metrics, albeit to a lesser extent. In contrast, sectors like Media and Metal, with near-zero or negative coefficients, demonstrate that growth rate does not substantially alter financial outcomes, possibly due to the capital-intensive or demand-stable nature of these industries.

These findings emphasise the sector-specific dynamics of growth rate as a determinant of corporate performance. High-growth sectors like FMCG and IT leverage expansion to drive financial success, while industries such as Media and Metal may prioritise stability over aggressive growth strategies. This nuanced understanding reinforces the importance of aligning growth initiatives with sectoral characteristics to optimise performance outcomes, a key insight developed throughout the thesis.

5.10.8 Impact of Firm Age on Corporate Performance Metrics

This section examines the sector-specific impact of firm age on corporate performance metrics - ROCE, ROA and ROE - using Fixed and Random Effect models based on Hausman test. The findings show that firm age affects financial performance differently across industries, with some sectors experiencing significant negative effects, while others see little to no impact. These results highlight the need to account for industry-specific factors when assessing the long-term performance of firms.

Table 5.24

Sector-wise Impact of Firm Age on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	-1.525572	-0.869025	-0.005916#
	-6.040689	-6.528056	-5.082971
	0.0000***	0.0000***	0.0000***
FMCG	-1.738365	-0.581112	0.011173
	-2.025626	-2.116568	0.948430
	0.0451**	0.0364**	0.3449
Healthcare	-0.772937	-0.630780	-0.011477
	-3.283780	-3.346648	-3.422978
	0.0014***	0.0011***	0.0009***
IT	-0.328053#	-0.200593#	-0.002253#
	-2.444920	-2.122085	-1.796130
	0.0160**	0.0360**	0.0751*
Media	0.231800	0.056034#	0.000848#
	0.487404	1.481746	0.286542
	0.6270	0.1411	0.7750
Metal	0.084113#	0.052015#	-0.001135#
	0.944849	0.847868	-0.434561
	0.3465	0.3981	0.6646
Pharma	-0.990405	-0.782988	-0.013556
	-4.486289	-4.483191	-4.440077
	0.0000***	0.0000***	0.0000***

Sectors	ROCE	ROA	ROE
Realty	-0.017028#	-0.006510#	-0.004083
	-0.630365	-0.291048	-1.756455
	0.5297	0.7715	0.0818*
Consumer Durables	-2.208239	-0.803026	-0.019983
	-5.485118	-5.104670	-4.736871
	0.0000***	0.0000***	0.0000***
Oil & Gas	-0.161191	0.043346	-0.002629
	-1.037450	0.462836	-1.123016
	0.3017	0.6444	0.2638

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis presented in Table 5.24 investigates the impact of firm age on corporate performance metrics - ROCE, ROA and ROE - across various sectors. The results underscore the complex and varied influence of firm age on financial outcomes, revealing statistically significant effects in sectors such as Automobile, FMCG, Healthcare, IT, Pharma and Consumer Durables, with p-values predominantly below 0.05. In contrast, sectors like Media, Metal, Realty and Oil & Gas display limited or insignificant relationships, suggesting that firm age has a minimal role in shaping performance in these industries.

The regression coefficients provide a deeper understanding of this relationship. In the Automobile sector, firm age negatively impacts performance, with coefficients of -1.53 for ROCE and -0.87 for ROA, reflecting a decline in capital and asset efficiency as firms mature. Similarly, in Consumer Durables, a 1-unit increase in firm age is associated with a 2.21 unit decrease in ROCE, highlighting the challenges faced by older firms in maintaining competitive efficiency. In the Healthcare and Pharma sectors, the negative coefficients, such as -0.77 for ROCE in Healthcare and -0.99 in Pharma, suggest that firm age could hinder performance due to the dynamic and innovation-driven nature of these industries.

Conversely, sectors like Media and Metal exhibit near-zero coefficients, indicating a neutral relationship between firm age and performance metrics. For instance, in the Media sector, the coefficients for ROCE and ROA are 0.23 and 0.056, respectively, with no statistical significance, highlighting the minimal impact of firm maturity in this industry. This finding suggests that the performance of firms in these sectors is more influenced by external market dynamics and operational strategies rather than their age.

These insights reinforce the importance of tailoring strategies to sector-specific dynamics. In industries where firm age negatively impacts performance, such as Automobile and Consumer Durables, companies may need to adopt innovative practices and process improvements to remain competitive. Conversely, in sectors where firm age has little to no effect, firms can leverage their established market presence to focus on long-term growth strategies. This nuanced understanding aligns with the broader themes of this thesis, emphasising the sectoral heterogeneity in the determinants of corporate performance.

The analysis confirms that *the influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance metrics (ROCE, ROA and ROE) varies significantly across sectors*. Firm size positively impacts performance in sectors like FMCG, IT and Consumer Durables, where economies of scale and operational efficiency drive better outcomes, but shows limited significance in sectors like Realty and Oil & Gas. Capital structure demonstrates a mixed effect, enhancing ROCE in sectors like FMCG while negatively affecting ROA in highly leveraged industries such as Pharma and Oil & Gas. Liquidity significantly improves performance in Healthcare and Pharma, supporting operational flexibility, but its role is negligible in IT and Media. Asset tangibility shows contrasting effects, positively influencing performance in capital-intensive sectors like Automobile but reducing efficiency in FMCG and Media due to high maintenance costs. Business risk yields positive impacts in Consumer Durables and Healthcare, reflecting the benefits of calculated risk-taking, but negatively affects Pharma and Oil & Gas, where regulatory challenges amplify vulnerabilities. Growth rate serves as a

critical driver in high-growth sectors like FMCG and IT, but has minimal impact in stable industries such as Metal and Realty. Firm age negatively influences performance in innovation-driven sectors like Healthcare and Consumer Durables, reflecting the challenges of aging infrastructure, while showing limited significance in Media and Metal. These findings highlight the substantial sectoral variability in financial performance determinants, emphasising the need for tailored strategies that align with industry-specific dynamics to optimise profitability and efficiency.

5.11 Sectoral Analysis of the Impact of Temporal Shifts on Corporate Performance Metrics

This section uses Fixed and Random Effect models based on Hausman test to explore the impact of temporal shifts, specifically pre-2014 vs. post-2014 periods, on corporate performance metrics - ROCE, ROA and ROE - across different sectors. Different industries experience significant changes in their performance metrics over time due to external temporal factors. To better understand industry-specific trends and adapt strategies accordingly, these findings highlight the importance of accounting for temporal dynamics when evaluating corporate performance.

Research Objective 4:

To investigate the temporal impact on corporate performance metrics (ROCE, ROA and ROE) across sectors before and after 2014 and identify industries significantly affected by these shifts.

Research Hypothesis:

Temporal shifts (pre-2014 vs. post-2014) significantly impact corporate performance metrics (ROCE, ROA and ROE) across sectors, affecting industries differently

Table 5.25

Sectoral Impact of Temporal Effects (Pre-2014 vs. Post-2014) on Corporate Performance Metrics

Sectors	ROCE	ROA	ROE
Automobile	0.949485	0.829477	-0.104141#
	0.427610	0.708700	-4.882421
	0.6697	0.4799	0.0000***
FMCG	-6.645392	-0.308896	-0.092928
	-1.203719	-0.174892	-1.226175
	0.2311	0.8615	0.2226
Healthcare	-5.157309	-3.574605	-0.019340
	-2.655252	-2.298331	-0.699022
	0.0091***	0.0235**	0.4861
IT	-1.435059#	-1.204933#	-0.009437#
	-0.922652	-1.182905	-0.706065
	0.3581	0.2393	0.4816
Media	-4.616162	-1.060761#	0.015700#
	-1.187391	-0.877593	0.129940
	0.2377	0.3820	0.8968
Metal	-2.214606#	-1.881386#	0.139326#
	-1.479680	-1.820395	1.101636
	0.1414	0.0710*	0.2727
Pharma	-5.658908	-4.300674	-0.033735
	-3.186561	-3.061146	-1.373604
	0.0018***	0.0027***	0.1722
Realty	-1.203014#	-0.977941#	0.000255
	-1.400548	-1.361391	0.016347
	0.1640	0.1760	0.9870
Consumer Durables	-4.486366	-1.450839	0.008033
	-1.731842	-1.433278	0.295942
	0.0865*	0.1550	0.7679
Oil & Gas	-3.750611	-3.151768	-0.047576
	-2.791561	-3.891857	-2.350238
	0.0062***	0.0002***	0.0205**

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
For each sector, the first value in each cell represents the regression coefficient, the second is the t-value and the third is the p-value.
 # means Random Effect Model and without # means Fixed Effect Model.

The analysis presented in Table 5.25 investigates the impact of temporal shifts - specifically the periods before and after 2014 - on corporate performance metrics (ROCE, ROA and ROE) across various sectors. This temporal analysis offers critical insights into how economic and regulatory reforms influence sectoral performance over time. Significant temporal effects are observed in sectors such as Healthcare, Pharma, Oil & Gas and Consumer Durables, with p-values indicating high statistical relevance ($p < 0.05$), especially in ROCE and ROA. Conversely, in sectors like FMCG, IT, Media and Realty, the influence of temporal changes is mainly insignificant, suggesting that performance metrics in these industries are less sensitive to temporal shifts.

The regression coefficients shed light on the magnitude of these temporal impacts. In the Healthcare sector, the post-2014 period shows a decline in ROCE and ROA, which declined by 5.2 units and 3.6 units, highlighting the sector's sensitivity to regulatory and operational environment changes. Whereas, in the Pharma sector, there is a notable decrease in ROCE by -5.7 units & ROA by -4.3 units, indicating the influence of enhanced competition and evolving market dynamics on profitability & asset efficiency.

In contrast, the Oil & Gas sector demonstrates a significant decline across all three metrics, with a decrease of 3.8 units, 3.2 and a marginal decline of -0.05 units, respectively, in ROCE, ROA and ROE. This suggests that post-2014, the sector faced substantial headwinds, likely from fluctuating global oil prices and heightened environmental regulations. Interestingly, the Consumer Durables sector was less impacted, i.e., there is a slight yet significant decline in ROCE (-4.5 unit), indicating the sector's adaptation challenges in a rapidly evolving consumer market.

On the other hand, across the temporal divide, sectors like FMCG, IT and Media show minimal changes, with coefficients close to zero and insignificant p-values, indicating that the performance in these industries has remained relatively stable. This stability exhibits their resilience to external shocks and adaptability to changing market conditions.

These findings align with the broader themes of this study, highlighting the heterogeneous influence of temporal shifts across sectors. The findings highlight the necessity for effective sector-specific strategies to navigate changing economic and regulatory landscapes. Industries significantly impacted by temporal changes must adopt adaptive measures to sustain and enhance performance, while more stable sectors can focus on maintaining their competitive edge.

The analysis confirms that *temporal shifts (pre-2014 vs. post-2014) significantly impact corporate performance metrics (ROCE, ROA and ROE) across sectors, with varying effects.* Sectors like Healthcare, Pharma and Oil & Gas exhibit pronounced declines in ROCE and ROA, reflecting sensitivity to regulatory changes, market competition and global dynamics. In contrast, FMCG, IT and Media show minimal temporal effects, highlighting resilience and adaptability. Consumer Durables experience moderate declines, indicating adaptation challenges in evolving markets. These findings emphasise the heterogeneous impact of temporal shifts, underscoring the need for sector-specific strategies to address challenges and leverage opportunities in changing economic and regulatory landscapes.

5.12 Sectoral Analysis of Model Fit and Statistical Significance for Corporate Performance Metrics

This section uses R-squared, Adjusted R-squared and F-statistic values to examine the model fit and statistical significance of corporate performance metrics - ROCE, ROA and ROE - across various sectors. The analysis evaluates how well the independent variables explain performance variations within each sector, highlighting differences in model effectiveness. While sectors such as Automobile, FMCG and Oil & Gas exhibit robust model fit with high R-squared values, others like Media and Realty show weaker explanatory power, underscoring the need for sector-specific approaches in performance evaluation.

Table 5.26

Sectoral Analysis of Model Fit and Statistical Significance for Corporate Performance Metrics

Sector	ROCE				ROA				ROE			
	R-squared	Adjusted R-squared	F-statistic	Prob	R-squared	Adjusted R-squared	F-statistic	Prob	R-squared	Adjusted R-squared	F-statistic	Prob
Automobile	0.819416	0.795925	34.88260	0.000000***	0.851689	0.832397	44.14617	0.000000***	0.511754#	0.481937	17.16341	0.000000***
FMCG	0.789974	0.761005	27.26952	0.000000***	0.757435	0.723978	22.63892	0.000000***	0.701955	0.660846	17.07522	0.000000***
Healthcare	0.625673	0.569171	11.07345	0.000000***	0.610950	0.552226	10.40366	0.000000***	0.521342	0.449092	7.215780	0.000000***
IT	0.355936#	0.311518	8.013300	0.000000***	0.331655#	0.285563	7.195398	0.000000***	0.418935#	0.378862	10.45419	0.000000***
Media	0.607501	0.553487	11.24718	0.000000***	0.232609#	0.180138	4.433080	0.000103***	0.044763#	-0.020552	0.685336	0.703703
Metal	0.288144#	0.243998	6.527051	0.000000***	0.280882#	0.236285	6.298287	0.000001***	0.132674#	0.078886	2.466623	0.016075**
Pharma	0.612797	0.559846	11.57292	0.000000***	0.602518	0.548162	11.08458	0.000000***	0.559162	0.498876	9.275219	0.000000***
Realty	0.115343#	0.054853	1.906826	0.065242*	0.124992#	0.065162	2.089128	0.042160**	0.178745	0.058194	1.482731	0.119118
Consumer Durables	0.632997	0.571829	10.34863	0.000000***	0.792583	0.758013	22.92720	0.000000***	0.564950	0.492442	7.791528	0.000000***
Oil & Gas	0.757268	0.723200	22.22835	0.000000***	0.808606	0.781744	30.10193	0.000000***	0.626377	0.573939	11.94502	0.000000***

Source: Data compiled by the researcher from CMIE ProwessIQ
*Notes: *** Significance at 1% level; ** Significance at 5% level; * Significance at 10% level.*
 # means Random Effect Model and without # means Fixed Effect Model.

Table 5.26 provides a detailed sectoral analysis of the model fit and statistical significance for corporate performance metrics - ROCE, ROA and ROE. The R-squared and Adjusted R-squared values across sectors indicate the extent to which independent variables explain the variance in performance metrics. Sectors such as Automobile, FMCG and Oil & Gas show high R-squared values, often exceeding 75% for ROCE and ROA, underscoring the strong explanatory power of the models in these industries. This implies that firm-specific and sectoral factors comprehensively capture performance variations, with statistically significant F-statistics ($p < 0.001$) reinforcing model reliability.

Media and Realty display relatively lower R-squared values, particularly for ROE. At the same time, Media exhibits an R-squared of just 4.5%, highlighting the limited predictive capability of the models in these industries, indicating the impact of external or unobserved variables. Overall, the results show the varying effectiveness of model specifications across sectors, reflects the challenging interaction of financial, operational and market dynamics in shaping corporate performance. These findings align with the study's broader objective of tailoring financial strategies to sector-specific realities.

5.13 Chapter Summary

The analysis presented in this section underscores the diverse impact of key determinants on corporate performance across different industries. The findings reveal that factors such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate, firm age and temporal shifts affect each sector uniquely, with varying degrees of significance across ROCE, ROA and ROE.

Key insights from this analysis indicate that certain sectors, such as FMCG, consumer durables and oil & gas, show robust model fit and high explanatory power for the selected financial metrics, suggesting that key determinants are crucial in driving performance within these industries. Conversely, other sectors like IT, media and metals demonstrate lower model fit, implying that external or unobserved factors may substantially influence their performance outcomes. In addition, temporal analysis

reveals notable performance shifts in some sectors post-2014, showing the impact of economic and regulatory changes on corporate profitability and efficiency.

These findings provide a comprehensive framework for assessing financial health and refining operational strategies tailored to sectoral needs. By identifying the critical drivers of corporate performance, this analysis equips firms with actionable insights to enhance profitability, manage risks and sustain competitiveness in diverse industry contexts. Overall, this analysis supports the need for sector-specific financial strategies. To maximise performance, companies must consider internal and external metrics. In order to better navigate challenges, capitalise on growth opportunities and optimise their financial performance, companies should align their corporate strategy with these unique sectoral dynamics. This sectoral approach provides a solid foundation for industry-specific financial planning and policy formulation, ultimately supporting sustainable growth and competitiveness.

Chapter VI

Summary, Findings and Conclusions

6.1 Introduction

Corporate performance within the Indian capital market, particularly among non-financial corporations, has garnered significant attention from researchers, investors, managers and policymakers. Understanding the interplay of key influencing attributes such as firm size, capital structure, liquidity, tangibility, growth rate, business risk and firm age with performance metrics like Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) is crucial for fostering corporate success and ensuring sustainable growth. This study builds on previous research by systematically exploring these relationships within the Indian context, guided by established financial and economic theories.

Key theories anchoring this study include the Resource Based View, which posits that unique resources like firm size and asset tangibility provide competitive advantages; the Agency Theory, which emphasises the alignment of management and shareholder interests for improved performance; and the Trade-Off Theory of Capital Structure, which highlights the balance between the benefits and costs of debt financing. Furthermore, the Pecking Order Theory and Contingency Theory underscore the hierarchical nature of financing preferences and the sectoral-specific influences on performance determinants.

The Indian market, characterised by its diversity and evolving economic policies, offers a unique landscape for studying non-financial corporations. While past studies have examined some performance determinants, they often lacked a sectoral and temporal perspective within India's dynamic economic environment. This study addresses these gaps by examining key influencing attributes, sectoral variations and

the impact of economic and regulatory reforms before and after 2014, a period characterised by substantial regulatory changes and globalisation.

The study is guided by the following research questions:

1. What are the distributional characteristics (averages, variability, skewness and kurtosis) and the correlations of financial performance metrics (ROCE, ROA and ROE) with key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age among Indian non-financial companies?

2. How do key variables such as size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age influence financial performance metrics like ROCE, ROA and ROE?

3. What is the impact of key variables on financial performance metrics across different sectors?

4. How do temporal shifts before and after 2014 affect corporate performance metrics (ROCE, ROA and ROE) across various sectors in the Indian non-financial sector?

To answer these questions, the study examined the top 10 companies from 10 key sectors, based on their weightage in the Nifty indices, ensuring robust representation of the Indian corporate landscape. Using a dataset from the CMIE Prowess database, the research employed multiple regression analysis, panel data techniques and dummy variable for temporal categorisation. This systematic approach integrates theoretical insights with empirical rigour to evaluate cross-sectional and temporal dimensions of corporate performance.

The specific objectives of this study are as follows:

5. To analyse the distributional characteristics (averages, variability, skewness and kurtosis) and the correlations of financial performance metrics (ROCE, ROA and ROE) with key variables such as firm size, capital structure, liquidity, asset

tangibility, business risk, growth rate and firm age among Indian non-financial companies.

6. To evaluate the influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE).

7. To analyse the impact of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance (ROCE, ROA and ROE) across different sectors.

8. To investigate the temporal impact on corporate performance metrics (ROCE, ROA and ROE) across sectors before and after 2014 and identify industries significantly affected by these shifts.

Based on the objectives outlined, the study proposes the following research hypotheses:

5. Key variables such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age exhibit distinct distributional characteristics (averages, variability, skewness and kurtosis) and significant correlations that reflect sectoral differences in financial performance metrics (ROCE, ROA and ROE) among Indian non-financial companies

6. Key factors (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) significantly influence the financial performance metrics (ROCE, ROA and ROE) of Indian non-financial corporations

7. The influence of key variables (firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age) on financial performance metrics (ROCE, ROA and ROE) varies significantly across different sectors

8. Temporal shifts (pre-2014 vs. post-2014) significantly impact corporate performance metrics (ROCE, ROA and ROE) across sectors, affecting industries differently

The analysis uses a comprehensive methodological framework, starting with descriptive statistical methods to examine the distribution characteristics of the variables. Metrics such as mean, standard deviation, skewness and kurtosis are employed to identify patterns, distributional characteristics, sectoral differences and the presence of outliers within the dataset. This foundational step sets the stage for more advanced analysis by revealing key characteristics of the data, such as the variability of financial metrics across firms and sectors. Visualisations and tabular representations are used to illustrate trends, improving data interpretability.

A correlation analysis assesses the relationships between variables, identifying significant interactions between key influencing factors and performance indicators. For example, the study explores how firm size, asset tangibility or capital structure relates profitability indicators like ROCE, ROA and ROE. This is followed by panel data regression analysis, which uses fixed effects and random effects models to evaluate the impact of independent variables while accounting for cross-sectional and temporal variations. The Hausman test is applied to determine the most suitable model for the dataset. Sectoral segmentation adds another layer to the analysis, allowing for industry-specific insights highlighting unique financial dynamics and operational strategies.

Furthermore, the methodology incorporates a temporal dimension to analyse the effects of significant economic and regulatory reforms, particularly those implemented post-2014. Dummy variable is used to capture the influence of these reforms on financial performance metrics over time. Variables like firm size and business risk are analysed using log-transformed data to normalise variations and ensure consistency, while metrics such as liquidity, capital structure and business risk are explored for their impacts on corporate performance. This combination of statistical rigour and sectoral focus enables the study to provide actionable insights into the determinants of financial performance while accounting for temporal and industry-specific variations, making it relevant for academic and practical applications.

6.2 Findings

Based on the analysis conducted, the findings of the study regarding the objectives set are provided below:

6.2.1 Trends in Corporate Performance Indicators

1. ROCE values exhibit significant variability, ranging from 150% to -40%, with notable fluctuations in the first 25 companies (Automobile, FMCG and Health Care sectors) and stabilisation thereafter, except for peaks in IT and Realty sectors.

2. Sectoral and operational differences strongly influence ROCE, reflecting diverse capital efficiency across firms.

3. ROA demonstrates significant variability, ranging from 50% to below -10%, with frequent spikes in the initial 25 companies (Automobile, FMCG and Health Care sectors) and higher fluctuations among mid-range firms (Health Care, IT, Media, Metal and Pharma sectors).

4. The latter part of the sample (Realty, Consumer Durables and Oil & Gas sectors) shows more consistent ROA, reflecting stable asset utilisation in these industries.

5. ROE fluctuates within a narrower range (-2% to 2%), with notable outliers in the Media and Metal sectors showing spikes up to 5% and dips to -8%.

6. The general uniformity in ROE across most companies reflects conservative financial practices and consistent profitability.

6.2.2 Trends in Key Factors Influencing Corporate Performance

7. Firm size, represented by log-transformed market capitalisations, clusters between 6 and 8, indicating predominantly large firms, with occasional gaps suggesting smaller firms. The distribution emphasises the significant role of firm size in influencing financial performance.

8. Leverage ratios primarily range from -5 to 5, reflecting moderate debt reliance, with notable peaks and troughs highlighting industry-specific variations in debt usage. Extreme leverage profiles reveal diverse financing strategies and sector-specific capital structure preferences.

9. Most companies show low liquidity ratios (<0.01), indicating limited trading activity, while a few outliers with high liquidity suggest enhanced financial flexibility and stronger market engagement. The Modified Turnover Ratio highlights the correlation between trading activity, market interest and firm size.

10. Asset tangibility ranges widely from 0 to 0.9, with higher ratios in manufacturing sectors (e.g., Media, Metal) and lower ratios in technology or service-oriented sector. This variation underscores the influence of asset structure on capital and operational strategies across industries.

11. Most companies exhibit modest sales growth rates (-5% to 5%), with occasional spikes in sectors like Health Care, IT and Metal, reflecting successful strategies or favourable market conditions. The stable or slow growth observed in the majority indicates consistent performance trends across sectors.

12. Business risk fluctuates between 2 and 5, with a notable dip in the IT sector and an increasing trend in Pharma, Realty, Consumer Durables and Oil & Gas sectors toward the latter part of the sample. The variability highlights the critical need for managing operational and market uncertainties across industries.

13. Firm ages vary significantly, ranging from under 10 years to over 120 years, with peaks in long-established companies from FMCG, Health Care, Metal, Realty and Consumer Durables sectors. This diverse mix of lifecycle stages influences stability and financial outcomes across the sample.

6.2.3 Distributional Characteristics and Correlations

i. Mean Analysis of Financial Variables: Sector-wise

14. Profitability Variations Across Sectors: The FMCG sector demonstrates the highest efficiency in capital and equity returns, with a mean ROCE of 34.86 and ROE of 0.36, while the IT sector leads in asset utilisation with a ROA of 18.83. In contrast, the Realty and Media sectors exhibit the lowest profitability metrics, highlighting significant sectoral disparities in financial performance.

15. Sectoral Differences in Key Influencing Factors: The Oil & Gas and FMCG sectors include the largest firms (mean firm size of 5.72 and 5.68, respectively), while the Media sector comprises the smallest. Capital structure varies widely, with Realty (2.70) and FMCG (2.69) sectors relying more on debt financing, whereas IT (1.44) and Pharma (1.60) maintain lower leverage.

16. Diverse Risk and Growth Profiles: The IT and Realty sectors show the highest growth rates (0.32), while FMCG and Pharma lag behind. Metal and Oil & Gas sectors face the highest business risk (log values of 4.23 and 4.35), reflecting greater financial volatility compared to more stable sectors like Realty, Consumer Durables and Media. These findings underscore the impact of sectoral dynamics on risk and growth performance.

ii. Standard Deviation Analysis of Financial Variables: Sector-wise

17. High Variability in Profitability and Capital Structure: Sectors such as FMCG and Media exhibit the highest variability in profitability metrics (e.g., ROCE SD: 31.96 for FMCG), indicating a broad range of performance among firms. Similarly, capital structure variability is most pronounced in the Media (SD: 2.30) and Realty (SD: 2.14) sectors, highlighting diverse leverage strategies within these industries.

18. Consistency in Specific Sectors: Sectors like Realty and Pharma demonstrate greater consistency, with lower standard deviations across profitability metrics

(e.g., ROCE SD: 3.92 for Realty) and key determinants, suggesting more uniform operational and financial practices.

19. Diverse Growth and Risk Profiles: The IT and Health Care sectors show the highest variability in growth rates (SD: 1.66 and 1.49, respectively) and the IT sector shows highest variability in business risk, reflecting dynamic market conditions and strategic differences. In contrast, the FMCG and Consumer Durables sectors have more consistent growth trends, reflecting stable market conditions and operational strategies.

iii. Skewness Analysis of Financial Variables: Sector-wise

20. Profitability Metrics Reflect Sectoral Asymmetry: ROCE and ROA exhibit significant positive skewness in sectors like Realty (ROA skewness: 2.21, ROCE skewness: 1.79), indicating a concentration of firms with lower profitability and a few outliers achieving exceptionally high returns. Conversely, ROE shows extreme negative skewness overall (-9.03), particularly in the Metal sector (-10.53), highlighting widespread low or negative equity returns in this sector.

21. Extreme Asymmetry in Liquidity and Growth Rates: Liquidity demonstrates extreme positive skewness across all sectors (overall: 19.16), with Metal (11.35) and Automobile (11.31) sectors showing the most pronounced skewness, indicating that trading activity is highly concentrated in a few firms. Similarly, growth rates exhibit extreme skewness (overall: 16.03), especially in the Health Care (11.30) and IT (11.18) sectors, driven by a small number of high-growth firms.

22. Key Influencing Factors Vary Across Sectors: Capital structure displays strong positive skewness (overall: 2.30), with the FMCG sector (3.25) having the most uneven distribution, reflecting a majority of firms with low leverage and a few with very high debt levels. The tangibility of assets and firm age also vary, with sectors like Realty and IT (skewness: 2.25 and 2.18 for tangibility, 1.99 and 1.54

for age) reflecting higher proportions of firms with lower tangibility and younger firms compared to other sectors.

iv. Kurtosis Analysis of Financial Variables: Sector-wise

23. Extremity in Profitability Metrics and Growth Rate: High kurtosis in ROCE (15.13 overall, 8.97 for Realty) and ROE (240.33 overall, 119.01 for Metal) highlights the presence of extreme outliers, with a few firms achieving exceptionally high profitability while most firms cluster near central values. Similarly, the growth rate exhibits extreme kurtosis (312.65 overall), particularly in Health Care (131.70) and IT (128.18), indicating concentrated exceptional performance in a few firms.

24. Sectoral Disparities in Liquidity and Capital Structure: Liquidity displays extreme kurtosis (433.30 overall), especially in the Automobile (131.63) and Metal (131.64) sectors, suggesting a few firms with significantly higher trading activity compared to the majority. Capital structure also demonstrates substantial kurtosis (28.18 overall), driven by extreme leverage variations in sectors like Media (22.49), Metal (19.13) and FMCG (16.59).

25. Sector-Specific Variability in Firm Age and Tangibility: Firm age shows moderate kurtosis (3.72 overall), with high values in Realty (5.87) and IT (5.30), reflecting the mix of older and newer firms. The tangibility of assets exhibits higher kurtosis in IT (11.20) and Realty (8.22), suggesting a few firms with significantly more tangible assets than the average in these sectors. These findings emphasise the sectoral diversity and the influence of outliers on financial dynamics.

v. Correlation Analysis: All Companies

26. Profitability Metrics: ROCE and ROA have a strong positive correlation (0.856, $p < 0.001$), while ROE shows moderate positive correlations with both ROCE (0.572, $p < 0.001$) and ROA (0.504, $p < 0.001$), indicating that higher asset and operational efficiency drive better equity returns.

27. Firm Size: Larger firms (firm size) are associated with higher business risk (0.753, $p < 0.001$) and older firm age (0.204, $p < 0.001$) but rely less on debt financing, as indicated by a negative correlation with capital structure (-0.154, $p < 0.001$).

28. Capital Structure: Higher debt levels negatively impact asset efficiency, shown by a negative correlation with ROA (-0.246, $p < 0.001$). However, firms with more tangible assets are more likely to use debt, as evidenced by a positive correlation with the tangibility of assets (0.122, $p < 0.001$).

29. Liquidity: Liquidity exhibits weak and mostly insignificant correlations with profitability and other firm-specific characteristics, suggesting a limited direct influence on financial performance in this dataset.

30. Tangibility of Assets: Tangibility has a negative correlation with ROCE (-0.055, $p = 0.048$) and ROA (-0.081, $p = 0.0036$), indicating that higher tangible assets may reduce returns, but it strongly correlates with capital structure (0.122, $p < 0.001$), facilitating leverage.

31. Business Risk: Firms managing higher risk levels still achieve moderate profitability, as business risk correlates positively with ROCE (0.166, $p < 0.001$) and ROA (0.238, $p < 0.001$). Larger and older firms are associated with higher business risk.

32. Growth Rate and Firm Age: Growth rate shows weak and insignificant correlations with profitability metrics, while firm age positively correlates with ROCE (0.119, $p < 0.001$) and firm size (0.204, $p < 0.001$), reflecting that older firms are generally larger and more capital-efficient but face moderate operational challenges.

6.2.4 Influence of Key Variables on Financial Performance

i. Determinants of ROCE - Fixed Effect Model Results

33. Key Determinants of ROCE: Larger firms (Firm Size) and higher leverage (Capital Structure) significantly enhance ROCE ($p < 0.0001$ and $p = 0.0001$,

respectively), while increased liquidity has a modest positive effect (p = 0.0765). In contrast, higher asset tangibility and older firm age negatively affect ROCE (both p < 0.0001), highlighting the impact of firm characteristics on capital efficiency.

34. Insignificant and Time-Specific Effects: Business Risk and Growth Rate do not significantly influence ROCE, while post-2014 time-specific effects captured by a dummy variable significantly reduce ROCE (p = 0.0125), indicating a decline in capital efficiency during this period.

35. Model Robustness: The Fixed Effect model demonstrates strong explanatory power (R-squared: 73.6%) and significant overall fit (F-statistic: 31.43, p = 0.0000). The Redundant Fixed Effects Test (Cross-section F-statistic: 28.06, p = 0.0000) confirms the importance of controlling for key influencing factors' heterogeneity.

36. Strategic Implications: Firms should optimise capital structure and liquidity, manage asset composition and address challenges associated with firm age to improve capital efficiency, leveraging insights from the robust Fixed Effect model to guide strategic decision-making.

ii. Determinants of ROA - Fixed Effect Model Results

37. Key Determinants of ROA: Larger firms (Firm Size) demonstrate significantly higher ROA (p < 0.0000), while higher leverage (Capital Structure, p = 0.0367), greater asset tangibility (p < 0.0000) and older firm age (p < 0.0000) negatively impact ROA. These findings emphasise the influence of firm size, capital structure and asset composition on operational efficiency.

38. Insignificant Variables: Liquidity, Business Risk and Growth Rate show no significant effect on ROA, indicating limited direct influence of these factors on asset efficiency within the dataset.

39. Time-Specific and Model Robustness: Post-2014 effects captured by a dummy variable significantly reduce ROA (p = 0.0015). The FE model demonstrates strong explanatory power (R-squared: 74.73%) and significance (F-statistic: 33.33, p = 0.0000), with key determinants' effects confirmed as essential (Cross-section F-statistic: 25.93, p = 0.0000).

40. Strategic Implications: To enhance ROA, firms should focus on optimising capital structure, improving asset utilisation and addressing challenges related to firm age, leveraging insights from this robust model for informed strategic decision-making.

iii. Determinants of ROE - Fixed Effect Model Results

41. Significant Determinants of ROE: Larger firms (p = 0.0001) achieve higher ROE due to economies of scale, while higher tangible assets (p = 0.0001), business risk (p = 0.0489) and firm age (p = 0.0066) negatively impact ROE, highlighting the importance of managing asset composition, operational challenges and ageing infrastructure.

42. Insignificant Variables: Capital structure, liquidity, growth rate and time-specific effects do not significantly influence ROE within the studied sample, indicating limited relevance to equity returns.

43. Model Strength and Robustness: The FE model demonstrates an R-squared value of 26.52%, indicating the model's explanatory capacity and significance (F-statistic: 4.07, p = 0.0000), with the Redundant Fixed Effects Test (p = 0.0000) confirming the importance of key determinants' effects.

44. Strategic Implications: Firms should prioritise scaling operations, managing business risks and optimising tangible assets to enhance ROE, providing actionable strategies for improving equity returns.

iv. Dummy Variable: Temporal Effect

45. The analysis reveals a significant decline in ROCE (p = 0.0125) and ROA (p = 0.0015) after 2014, indicating reduced capital efficiency and asset returns. This decline may be attributed to changes in the economic environment, such as a rebound in foreign direct investment (FDI), demonetisation, corporate law reforms including the Companies Act 2013, and the implementation of the Insolvency and Bankruptcy Code (IBC), as well as sectoral dynamics during the post-2014 period.

46. ROE remained unaffected (p = 0.9552) by the temporal shift, suggesting stability in equity returns across the two time periods.

6.2.5 Impact of Key Variables on Financial Performance Metrics - Sector-wise

47. Firm size positively influences corporate performance metrics in sectors like Automobile and FMCG. In the Automobile sector, a 1% increase in firm size improves ROCE by 0.1756 ($p < 0.0001$), ROA by 0.0937 ($p < 0.0001$) and ROE by 0.0018 ($p < 0.0001$). Similarly, in the FMCG sector, firm size enhances ROCE by 0.2189 (p = 0.019) and ROA by 0.0781 (p = 0.009), while its impact on ROE remains insignificant (-0.0004, p = 0.746).

48. In the Media sector, firm size drives significant improvements in ROCE (0.1805, $p < 0.0001$) and ROA (0.0668, $p < 0.0001$), highlighting the importance of scale in enhancing financial performance within this industry.

49. Firm size positively influences corporate performance metrics in the Pharma sector, driving significant improvements in ROCE, ROA and ROE. Specifically, a 1% increase in firm size enhances, ROCE by 0.1021 ($p < 0.0001$), ROA by 0.0814 ($p < 0.0001$) and ROE by 0.00089 ($p < 0.0238$). These results highlight the critical role of firm size in driving superior financial outcomes in the pharmaceutical industry.

50. In the Consumer Durables sector, firm size also demonstrates a significant positive impact on corporate performance metrics. A 1% increase in firm size improves ROCE by 0.1466 ($p = 0.003$), ROA by 0.0519 ($p < 0.0001$) and ROE by 0.00109 ($p = 0.0053$). These findings underscore the advantages of scale in enhancing the financial performance of firms in this sector.

51. Pharma sector: High leverage significantly reduces performance, with adverse effects on ROCE (-11.54, $p < 0.0001$), ROA (-10.59, $p < 0.0001$) and ROE (-0.13, $p = 0.0002$), emphasising the risks of over-leverage in this industry.

52. Oil & Gas sector: Capital structure similarly impacts performance, with high leverage decreasing ROCE (-9.61, $p < 0.0001$) and ROA (-6.42, $p < 0.0001$), highlighting the need for cautious debt management in this capital-intensive sector.

53. Healthcare and Pharma sectors: Liquidity significantly enhances performance, with notable improvements in ROCE (1205.36, $p = 0.053$; 1216.36, $p = 0.069$) and ROA (992.63, $p = 0.047$; 1038.13, $p = 0.050$), highlighting its crucial role in these capital-intensive industries.

54. IT and Media sectors: Liquidity shows no significant impact on performance ($p > 0.90$ in IT and $p > 0.19$ in Media), indicating a limited reliance on liquid assets in these sectors.

55. Automobile sector: Asset tangibility positively influences performance, improving ROCE (25.08, $p = 0.050$) and ROA (19.67, $p = 0.004$), reflecting its integral role in capital and operational efficiency.

56. FMCG sector: Higher asset tangibility significantly reduces performance, with declines in ROCE (-73.87, $p < 0.0001$), ROA (-19.72, $p < 0.0001$) and ROE (-0.81, $p = 0.0001$), likely due to rigidity and maintenance costs.

57. Positive impacts: Business risk enhances performance in Healthcare (ROCE: 0.1101, p = 0.004) and Consumer Durables (ROCE: 0.0601, p = 0.047), reflecting the benefits of calculated risks in these sectors.

58. Adverse effects: Business risk significantly reduces performance in FMCG (ROCE: -0.5143, $p < 0.0001$) and Pharma (ROCE: -0.3047, p = 0.006), underscoring the challenges of risk exposure in these industries.

59. FMCG sector: Growth rate significantly enhances performance, with a positive impact on ROCE (35.08, p = 0.005) and ROA (15.31, $p < 0.001$), reflecting its critical role in driving efficiency.

60. Automobile sector: Growth rate positively influences performance, improving ROCE (11.75, $p < 0.0001$) and ROA (6.62, $p < 0.0001$), highlighting its importance in this dynamic industry.

61. Negative impact in mature sectors: Firm age significantly reduces ROCE (-1.53, $p < 0.0001$) and ROA (-0.87, $p < 0.0001$) in the Automobile sector and similarly affects ROCE (-0.99, $p < 0.0001$) and ROA (-0.78, $p < 0.0001$) in the Pharma sector.

62. Minimal influence in stable sectors: Firm age does not significantly impact performance in the Media and Metal sectors ($p > 0.30$), indicating resilience to age-related challenges.

6.2.6 Sectoral Analysis of the Impact of Temporal Shifts

63. Temporal shifts significantly impacted performance metrics in the Healthcare and Pharma sectors post-2014. In Healthcare, ROCE declined by -5.16 (p = 0.009) and ROA by -3.57 (p = 0.024). Similarly, in Pharma, ROCE decreased by -5.66 (p = 0.002) and ROA by -4.30 (p = 0.003), suggesting that these sectors' may be sensitive to changes in the economic environment, such as a rebound in foreign direct investment (FDI), demonetisation, corporate law reforms including the

Companies Act 2013, and the implementation of the Insolvency and Bankruptcy Code (IBC).

64. In the Oil & Gas sector, temporal effects caused significant declines across all metrics, with ROCE reducing by -3.75 ($p = 0.006$), ROA by -3.15 ($p < 0.001$) and ROE by -0.05 ($p = 0.021$), reflecting challenges from global oil price volatility and stricter environmental regulations.

65. The Consumer Durables sector experienced a slight yet significant reduction in ROCE by -4.49 ($p = 0.087$), pointing to adaptation challenges within a rapidly evolving consumer market.

66. Sectors such as IT and Realty demonstrated stable performance, with coefficients for ROCE, ROA and ROE being close to zero and p-values remaining statistically insignificant. This indicates resilience to temporal changes and external shocks in these sectors.

67. In contrast, sectors like Media and FMCG showed mixed results. While ROA and ROE coefficients were near zero and statistically insignificant, the ROCE coefficients were relatively larger (e.g., -4.62 for Media and -6.65 for FMCG) but remained statistically insignificant. This suggests that these sectors may be partially resilient but exhibit some sensitivity in return on capital employed.

68. Temporal effects exhibit sectoral heterogeneity, with marked sensitivity in Healthcare, Pharma and Oil & Gas, while FMCG, IT and Media demonstrated stability and adaptability across periods.

69. These findings suggest that industries facing significant temporal impacts need to adopt adaptive measures to sustain performance, while stable sectors should leverage their resilience to focus on long-term growth and maintaining competitive advantages.

6.3 Conclusions

This study provides a comprehensive exploration of the determinants of corporate performance in the Indian non-financial sector, focusing on the key performance metrics such as Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE). Using a robust dataset comprising 100 top-performing firms across ten major sectors, the analysis captures the interplay of key influencing attributes such as size, capital structure, liquidity, tangibility, growth rate, business risk and firm age. The inclusion of panel data regression models, fixed and random effects analysis and dummy variable ensures methodological rigor, allowing the study to evaluate sectoral disparities and temporal shifts effectively. The segmentation of the analysis into before and after 2014 further highlights the economic and regulatory transformations in India, particularly those brought about by major reforms like introduction of Companies Act 2013 and demonetisation.

The findings of this research underscore the sectoral heterogeneity and temporal influences on corporate performance. Attributes like firm size and tangibility exhibited strong correlations with financial efficiency metrics, particularly ROCE and ROA, while liquidity emerged as a significant determinant in capital-intensive industries like Healthcare and Pharma. Temporal analysis revealed the impact of post-2014 reforms, with distinct shifts in corporate strategies and financial outcomes. These insights are highly relevant for corporate managers seeking to optimise key determinants, policymakers aiming to foster sustainable growth and investors refining their sectoral strategies. By integrating academic, managerial and policy perspectives, the study makes a substantial contribution to understanding the financial dynamics of Indian non-financial corporations, providing practical recommendations to navigate a rapidly evolving economic landscape.

6.4 Chapter Summary

This study explores the determinants of corporate performance in Indian non-financial corporations, focusing on key profitability metrics such as ROCE, ROA and ROE and their relationships with key influencing attributes such as size, capital structure,

liquidity, tangibility, growth rate, business risk and firm age. Employing theories like Agency Theory, Resource Based View and Trade-Off Theory, the research integrates sectoral and temporal dimensions to uncover the dynamic interplay of financial and operational factors on performance across ten key industries. Findings reveal significant sectoral variations, with solid model fits observed in sectors like Automobile and FMCG, while weaker explanatory power is evident in Media and Realty. Temporal shifts post-2014 highlight performance declines in Healthcare, Pharma and Oil & Gas, reflecting sensitivity to changes in the economic environment, such as a rebound in foreign direct investment (FDI), demonetisation, as well as corporate law reforms including the Companies Act 2013 and market changes, while sectors like Realty and IT demonstrate resilience. The study ensures methodological rigour by employing Fixed and Random Effect models validated through the Hausman test, offering actionable insights for optimising corporate strategies based on sector-specific dynamics and external temporal influences.

Chapter VII

Recommendations

7.1 Introduction

The interaction of key determinants, industry variations and time dynamics highlighted in this study emphasises the complexity of enhancing corporate performance within the Indian non-financial sector. Addressing these challenges requires actionable strategies tailored to the unique needs of corporations, policymakers and investors, grounded in empirical evidence and sector-specific insights. This chapter articulates targeted recommendations to enhance financial efficiency, resilience and strategic adaptability across diverse industries while considering evolving regulatory landscapes and market demands. Additionally, the chapter identifies avenues for future research, emphasising the necessity of expanding analytical frameworks, integrating emerging variables and conducting cross-sectoral and international comparative studies. These recommendations and research directions aim to contribute to a more refined understanding of corporate performance determinants and to foster informed decision-making in an increasingly dynamic economic environment.

7.2 Recommendations

The following recommendations are tailored to provide strategic guidance for corporations, policymakers and investors, addressing sector-specific challenges and opportunities to enhance financial performance, foster innovation and promote sustainable growth.

7.2.1 Recommendations for Corporations

Based on the analysis conducted and the findings derived, the following recommendations are specifically tailored for corporations and their leadership to enhance decision-making and drive sustainable growth.

1. **Optimise Capital Structure**: Reduce dependency on debt in Pharma and Oil & Gas sectors to mitigate risks associated with high leverage (ROCE: -11.54, $p < 0.0001$; ROA: -10.59, $p < 0.0001$; ROE: -0.13, $p = 0.0002$). Firms should explore equity financing and internal reserves as alternative funding sources. Maintain balanced leverage in FMCG and Automobile sectors to optimise the cost of capital while ensuring financial stability.

2. **Enhance Liquidity Management**: Healthcare and Pharma firms should prioritise solid liquidity to manage operational uncertainties and capitalise on investment opportunities (ROCE: 1205.36, $p = 0.053$; ROA: 992.63, $p = 0.047$). IT and Media sectors should focus on deploying liquidity strategically for innovation and growth rather than routine operations, ensuring long-term competitiveness.

3. **Invest in Asset Modernisation**: Automobile sector should prioritise tangible asset investments to enhance operational efficiency and optimise capital utilisation (ROCE: 25.08, $p = 0.050$; ROA: 19.67, $p = 0.004$; ROE: 0.36, $p = 0.0105$). FMCG firms should shift focus toward intangible assets such as branding and R&D to strengthen market competitiveness (ROCE: -73.87, $p < 0.0001$; ROA: -19.72, $p < 0.0001$; ROE: -0.81, $p = 0.0001$).

4. **Manage Business Risk Effectively**: Encourage calculated risk-taking in Healthcare and Consumer Durables sectors to drive innovation and market expansion (ROCE: 11.01, $p = 0.004$; ROA: 7.97, $p = 0.0059$; ROE: 0.201, $p = 0.0229$). Strengthen risk mitigation frameworks in Pharma and FMCG sectors to enhance resilience against market disruptions (ROCE: -30.47, $p < 0.0057$; ROA: -24.55, $p = 0.0068$; ROE: -0.41, $p = 0.0087$).

5. **Scale Operations Strategically**: Larger firms in FMCG and Automobile sectors should leverage economies of scale to improve capital efficiency and operational productivity (ROCE: 17.56, $p < 0.0001$; ROA: 9.37, $p < 0.0001$; ROE: 0.18, $p < 0.0001$).

6. **Address Aging Challenges**: Mature firms in Pharma and Automobile sectors should invest in digital transformation and modernise infrastructure to stay

competitive in evolving markets (ROCE: -1.53, $p < 0.0001$; ROA: -0.87, $p < 0.0001$; ROE: -0.0059, $p < 0.0001$).

7. **Leverage Growth Opportunities**: Dynamic sectors like FMCG and IT should focus on market expansion and innovation-driven strategies to capitalise on growth opportunities (ROCE: 35.08, $p = 0.005$; ROA: 15.31, $p = 0.0002$; ROE: 0.55, $p = 0.0013$).

8. **Adopt Sector-Specific Strategies**: Consumer Durables firms should optimise internal efficiencies to leverage their strong model fit for ROCE, ROA and ROE (R-squared: 0.633, $p < 0.001$; R-squared: 0.793, $p < 0.001$; R-squared: 0.564, $p = 0.002$).

9. **Monitor Temporal Effects**: Sectors like Healthcare and Pharma, which experienced post-2014 declines in ROCE (Healthcare: -5.16, $p = 0.009$) and ROA (Pharma: -4.30, $p = 0.003$) whereas the ROE decreases in Automobile sector (-0.1041, $p < 0.001$), should implement adaptive strategies to counteract regulatory and market shifts.

10. **Improve Capital Allocation**: Reallocate resources in the Realty and Metal sectors to focus on initiatives that drive growth, given their lower explanatory power for ROCE, ROA and ROE.

11. **Enhance Innovation in IT**: Invest in advanced technologies to sustain competitive advantages and foster sustained growth.

12. **Integrate Sustainability Goals**: Align business practices with environmental regulations, especially in the Oil & Gas and Metal sectors, to ensure long-term viability.

13. **Invest in Workforce Development**: Build skill enhancement programs in industries undergoing technological shifts, such as IT and Healthcare, to improve productivity and innovation capacity.

14. **Focus on Digital Transformation**: Leverage digital technologies to streamline operations and enhance customer experiences across all sectors.

15. **Monitor Financial Metrics:** Regularly assess key financial metrics like ROCE, ROA and ROE to identify areas for improvement and track progress.

16. **Collaborate Across Sectors:** Foster partnerships and alliances to share resources, expertise and best practices for mutual growth.

7.2.2 Recommendations for Policymakers

Drawing from the analysis and findings, the following recommendations are designed to guide policymakers in fostering sectoral growth, enhancing competitiveness and promoting sustainable development across industries.

1. **Strengthen Sector-Specific Policies**: Provide tailored fiscal incentives for high-growth sectors like FMCG and IT to sustain expansion (FMCG: ROCE 35.08, $p = 0.005$; IT: ROA 6.98, $p < 0.001$).

2. **Encourage Innovation and R&D**: Offer grants or tax benefits for R&D investments in Healthcare and Pharma to boost competitiveness and innovation capacity (Healthcare: Liquidity ROCE 1205.36, $p = 0.053$).

3. **Promote Digital Transformation**: Support IT and Media sectors with subsidies for adopting advanced technologies, enhancing operational efficiencies and fostering innovation.

4. **Improve Access to Financing**: Provide low-interest loans or venture capital access for FMCG and Consumer Durables, enabling them to reduce debt reliance and enhance financial stability.

5. **Address Environmental Challenges**: Develop programs to support industries like Oil & Gas in transitioning to sustainable energy models (Oil & Gas: Temporal Impact ROCE -3.75, $p = 0.006$).

6. **Promote Export Competitiveness**: Streamline trade policies and reduce export barriers for sectors like Pharma and IT to foster global market expansion.

7. **Stabilise Economic Policies**: Mitigate temporal shocks by ensuring policy stability and predictability, particularly in sectors sensitive to regulatory changes

like Healthcare and Pharma (Healthcare: Temporal Impact ROCE -5.16, p = 0.009).

8. **Expand Infrastructure Development**: Build sector-specific infrastructure, such as logistics hubs for FMCG and manufacturing clusters for the Automobile and Metal sectors (Automobile: Asset Tangibility ROCE 25.08, p = 0.050).

9. **Support Emerging Sectors**: Provide incubation and funding support for startups in IT and Consumer Durables, fostering innovation and growth in these high-potential areas.

10. **Facilitate Skill Development**: Establish training centres to upskill the workforce in sectors like IT and Healthcare, aligning with industry demands and technological advancements.

11. **Encourage Green Practices**: Offer subsidies for adopting sustainable practices in Automobile, Oil & Gas, Metal and manufacturing industries, ensuring compliance with environmental regulations (Automobile: High Tangibility ROCE 25.08, p = 0.050).

12. **Reduce Bureaucratic Barriers**: Simplify approval processes for large-scale investments in sectors like Realty and Oil & Gas to encourage faster decision-making and execution.

13. **Foster Public-Private Partnerships**: Collaborate with corporations to address sectoral challenges, particularly in Healthcare and Pharma, enhancing resilience and innovation (Healthcare: Liquidity ROCE 1205.36, p = 0.053).

14. **Promote Financial Literacy**: Launch initiatives to improve financial literacy among corporate leaders, ensuring informed decision-making and efficient resource allocation.

15. **Simplify Tax Regimes:** Introduce simplified and uniform tax policies to reduce compliance burdens, enhance ease of doing business and attract foreign investment.

16. **Strengthen Capital Markets:** Develop policies to enhance market depth, reduce volatility and promote retail participation in equity and debt instruments.

17. **Implement Data-Driven Policies:** Use advanced analytics and big data to shape policies that address sector-specific challenges and predict future trends.

18. **Encourage Public-Private Partnerships:** Facilitate collaborations between public and private entities to drive sectoral growth and infrastructure development.

7.2.3 Recommendations for Investors

Based on the analysis and findings, the following recommendations are tailored for investors to guide strategic decision-making, ensure balanced portfolios and maximise returns while minimising risks across various sectors.

1. **Focus on High-Performing Sectors**: Prioritise investments in sectors like FMCG and IT for consistent returns, supported by their strong profitability metrics (FMCG ROCE: 35.08, $p = 0.005$; IT ROCE: 10.66, $p = 0.0001$, ROA: 6.98 $p = 0.0001$, ROE: 0.067, $p = 0.0005$).

2. **Diversify Portfolios**: Include stable sectors such as FMCG and IT alongside dynamic sectors like Pharma and Oil & Gas to balance risk and return potential.

3. **Monitor Debt Levels**: Exercise caution when investing in over-leveraged firms in Pharma and Oil & Gas, as high debt negatively impacts financial metrics (ROCE: -11.54, $p < 0.0001$; ROA: -10.59, $p < 0.0001$; ROE: -0.13, $p = 0.0002$).

4. **Capitalise on Liquidity Advantages**: Focus on Healthcare and Pharma firms with robust liquidity for resilience during market fluctuations (ROCE: 1205.36, $p = 0.053$; ROA: 992.63, $p = 0.047$).

5. **Leverage Temporal Stability**: Invest in sectors like FMCG and IT, which exhibit minimal impact from temporal shifts, ensuring stable long-term returns (ROCE and ROA temporal effects: insignificant, $p > 0.10$).

6. **Evaluate Growth Potential**: Target firms in sectors like Automobile and FMCG with positive growth trajectories, enhancing financial performance (ROCE: 11.75, $p < 0.0001$; ROA: 6.62, $p < 0.0001$).

7. **Target Younger Firms in IT**: Younger IT firms with innovation-driven strategies present significant growth opportunities (Growth Rate ROCE: 10.66, $p = 0.0001$).

8. **Focus on Asset Tangibility**: Prefer firms in the Automobile sector, where efficient tangible asset utilisation drives profitability (ROCE: 25.08, $p = 0.050$; ROA: 19.67, $p = 0.0039$; ROE: 0.36, $p = 0.0105$).

9. **Avoid Risky Firms**: Avoid high-risk firms in FMCG and Pharma, where business risks significantly reduce profitability (FMCG ROCE: -51.43, $p < 0.0001$; Pharma ROCE: -30.47, $p = 0.006$).

10. **Prioritise Stability**: Select firms in stable sectors like Realty and Media, with lower exposure to external shocks and temporal changes (ROCE temporal effects: insignificant, $p > 0.10$).

11. **Adopt Sector-Specific Strategies**: Tailor investments based on sector-specific characteristics, focusing on sectors with high explanatory power, like Consumer Durables (R-squared: ROA 0.793, ROCE 0.633, $p < 0.001$).

12. **Track Policy Impacts**: Monitor policy and regulatory trends in sectors like Oil & Gas to align investments with changing conditions impacting profitability (ROCE: -3.75, $p = 0.006$).

13. **Support ESG-Compliant Firms**: Prioritise investments in firms aligned with sustainability goals, particularly in Metal and Manufacturing, for long-term returns.

14. **Assess Ageing Firms Carefully**: Evaluate older firms in sectors like Pharma and Automobile for modernisation efforts, considering the impact of ageing on performance (Automobile ROCE: -1.53, $p < 0.0001$; Pharma ROCE: -0.99, $p < 0.0001$).

15. **Focus on Dividend-Yielding Firms**: Favour firms in stable industries like FMCG, offering consistent returns through dividends and ensuring steady income.
16. **Analyse Sectoral Trends:** Track industry-specific trends and technological advancements to make informed investment decisions.
17. **Understand Policy Impacts:** Stay informed about regulatory changes affecting key sectors to identify risks and opportunities.
18. **Monitor Global Markets:** Evaluate international trends, such as commodity prices and geopolitical events, that influence domestic sectors.
19. **Engage with Stakeholders:** Maintain dialogue with company management and industry experts to understand strategic goals and operational priorities.
20. **Invest in Resilient Firms:** Focus on firms that demonstrate adaptability to economic and regulatory shifts, ensuring long-term stability and returns.

7.3 Contributions of the Study

The study makes significant contributions by providing a comprehensive analysis of corporate performance determinants across diverse sectors of Indian non-financial firms. It offers valuable sectoral insights, emphasising the varying influence of key determinants such as firm size, capital structure, liquidity and asset tangibility, which shape financial outcomes uniquely across industries. By examining temporal shifts, particularly before and after 2014 periods, the study highlights the impact of economic and regulatory reforms on corporate profitability and efficiency. Employing advanced econometric models, such as Fixed Effect and Random Effect frameworks validated through robust statistical tests, the research ensures precision and reliability in its findings. The integration of key determinants, sectoral and temporal dimensions provide a holistic framework, enabling a refined understanding of corporate dynamics in the Indian context. Moreover, the study bridges theory and practice by offering actionable, evidence-based recommendations for corporations, policymakers and investors, thereby fostering sustainable growth and competitiveness across sectors.

These contributions collectively enrich academic discourse and inform strategic decision-making in dynamic economic environments.

7.4 Implications of the Study

The findings of this study carry substantial implications for policymakers, corporate managers, investors and academia, offering a multidimensional perspective on corporate performance dynamics in Indian non-financial sectors. For policymakers, the research provides critical insights into sector-specific determinants, enabling the formulation of targeted regulations and initiatives to foster economic growth and enhance sectoral performance. Corporate managers can leverage the results to refine their strategies by optimising determinants such as capital structure, liquidity and asset utilisation, ensuring improved financial outcomes and operational efficiency. For investors, the study offers valuable sectoral and temporal insights, guiding informed decision-making by identifying high-performing industries and understanding the impact of market dynamics on profitability. Academically, the research contributes to the theoretical understanding of corporate performance in emerging markets by integrating key determinants, sectoral, and temporal factors into a cohesive analytical framework. This comprehensive approach not only enriches existing literature but also provides actionable knowledge for navigating the complexities of dynamic economic environments.

7.5 Limitations of the Study

This study acknowledges several limitations inherent to its scope and methodology. First, while the selected key influencing factors, such as firm size, capital structure, liquidity, asset tangibility, business risk, growth rate and firm age, provide valuable insights, they may not fully capture the complex and multifaceted dynamics influencing corporate performance. Other potential determinants, such as macroeconomic conditions, geopolitical factors and sector-specific innovations, were beyond the scope of this research.

Second, the study examines only the top 10 companies from 10 non-financial sectors based on Nifty indices. While this selection is representative, it may limit the

generalisability of findings to smaller firms or less prominent sectors. Including a broader range of firms could provide more diverse and comprehensive insights.

Third, the analysis is confined to the 2010 – 2023 period, with a temporal segmentation of pre-2014 and post-2014. While this segmentation is meaningful in identifying shifts due to significant external changes such as regulatory and economic reforms, it may overlook long-term trends or the effects of short-term fluctuations on corporate performance. As well, the influence of macroeconomic factors on the financial performance of the non-financial companies under study, which may be significant, was not considered in the present analysis.

These limitations highlight opportunities for future research to broaden the scope, include additional variables such as macroeconomic factors and external shocks and explore longer or more granular time horizons. Such approaches could deepen understanding and offer more robust insights into the determinants of corporate performance.

7.6 Scope for Further Research

This study provides valuable insights into the determinants of corporate performance among Indian non-financial corporations. However, it also opens avenues for further research to enhance understanding and refine the scope of analysis. Future research could address the limitations identified in this study or explore additional dimensions to deepen insights into financial and operational dynamics.

Specific topics that could be explored include:

1. *Macroeconomic Determinants of Corporate Performance in Indian Non-Financial Sectors*: Examining how broad economic variables impact corporate outcomes.

2. *Influence of Key Determinants on the Performance of Financial Companies, including NBFCs and Banking Companies*: Investigating sector-specific drivers in financial industries.

3. *Sectoral Impacts of Economic Shocks on Indian Corporate Performance Metrics*: Analysing how different industries are affected by economic disruptions.

4. *Corporate Performance Analysis in Emerging Markets: A Cross-Country Perspective*: Understanding performance trends and differences in emerging economies.

5. *ESG Metrics as Determinants of Corporate Performance*: Evaluating the growing role of sustainability and governance factors in driving corporate success.

Longitudinal studies tracking changes in performance metrics over extended periods could capture the long-term impacts of strategic and external factors. Employing advanced modelling techniques, such as dynamic panel data analysis, could help account for lagged effects and establish clearer causality between determinants and corporate performance.

By exploring these avenues, future research can build upon the findings of this study, offering enriched perspectives that assist corporations, policymakers and investors in navigating an evolving economic and regulatory landscape.

7.7 Chapter Summary

The findings of this study elucidate the intricate relationships between firm-specific factors, sectoral dynamics and temporal shifts in shaping corporate performance among Indian non-financial corporations. By employing solid econometric models and integrating sectoral and temporal perspectives, the research provides refined insights into how financial strategies, operational efficiencies and external events influence key performance metrics like ROCE, ROA and ROE. The recommendations outlined for corporations, policymakers and investors underscore the importance of

aligning strategic actions with sector-specific realities and global trends. Moreover, the scope for further studies highlights the potential to refine and expand this research through broader datasets, emerging variables and comparative analyses. Together, these contributions serve as a foundation for fostering informed decision-making and sustainable growth in a rapidly evolving economic and regulatory environment, reinforcing the study's relevance to academia, industry and policy-making.

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