



**UNIVERSITY
OF TURKU**

Turku School of
Economics

The Role of Board Independence on Firm Performance in Emerging Economies

Food and Allied Industry of Bangladesh

International Business

Master's thesis

Author:

Asif Rabbi

Supervisors:

D.Sc. Majid Aleem

D.Sc. Elina Peltó

16.5.2025

Turku

The originality of this thesis has been checked in accordance with the University of Turku quality assurance system using the Turnitin Originality Check service. I hereby confirm that I have used AI assistance for the purpose of language enhancement, paraphrasing, and comprehending critical concepts in the preparation of this thesis. The AI tools include ChatGPT, Grammarly, and Quillbot.

Master's thesis

Subject: International Business

Author: Asif Rabbi

Title: The Role of Board Independence on Firm Performance in Emerging Economies

Supervisors: D.Sc. Majid Aleem, D.Sc. Elina Pelto

Number of pages: 130 pages + appendices 7 pages

Date: 16.5.2025

This study examines how board-level governance mechanisms influence firm performance within the Food and Allied Industry of Bangladesh, a strategically important and tightly regulated sector in an emerging economy. The study is grounded in Agency Theory and Resource Dependence Theory (RDT). It investigates whether the independent director ratio, board size, meeting frequency, and director attendance significantly affect firm performance. Firm performance is measured using Basic Earning Power (BEP), a contextually appropriate metric for capital-constrained environments. The study applies a quantitative panel-data approach, using an unbalanced panel dataset of publicly listed firms from 2017 to 2022. The unbalanced structure results from firm-specific listing years, as some companies were listed to the stock exchange after 2017. A Fixed Effects (FE) regression model with clustered standard errors (SE) is used alongside diagnostic checks and robustness tests. The findings indicate that structural board engagement, particularly through size and meeting frequency, positively affects performance, while independence and attendance do not. The study contributes to governance theory by showing that in ownership-concentrated, institutionally weak settings, structural engagement is more effective than formal independence. It also provides practical insights for firm-level decision-makers and policymakers aiming to improve governance effectiveness in emerging markets. While the study is limited by data availability and its industry-specific focus, it offers a robust foundation for future governance research in emerging markets.

Key Words: Board Independence, Corporate Governance, Firm Performance, Food and Allied Industry, Emerging Economies, Bangladesh, Agency Theory, Resource Dependence Theory (RDT), Basic Earning Power (BEP), Board Characteristics.

Table of Contents

1	Introduction	9
1.1	Background of the Study	9
1.2	Research Gap	11
1.3	Research Purpose	13
1.4	Structure of the Thesis	13
2	Literature Review and Hypothesis Development	16
2.1	Theoretical Framework: Agency and Resource Dependence Theories	16
2.1.1	Agency Theory and Board Independence	17
2.1.2	Resource Dependence Theory and Board Independence	19
2.2	Measuring Firm Performance in Corporate Governance Research	21
2.2.1	Accounting-Based Performance Metrics	22
2.2.2	Market-Based Performance Metrics	24
2.3	Board Independence in the Food and Allied Industry	25
2.4	Board Characteristics and Structural Board Influence on Firm Performance	27
2.4.1	Board Size and Firm Performance	28
2.4.2	Board Meetings and Governance Effectiveness	29
2.4.3	Board Attendance and Director Engagement	30
2.5	Firm-Specific Determinants of Operational Efficiency	31
2.6	Conceptual Framework Development	35
3	Empirical Context – The Food and Allied Industry in Bangladesh	39
3.1	Food and Allied Industry in Bangladesh	39
3.2	Market Condition	41
3.3	Industry Growth	42
3.4	Major Players	44
3.5	Corporate Governance Reforms and BSEC Guidelines	45
4	Methodology	48
4.1	Research Design and Approach	48
4.2	Data Collection and Sample Selection	49

4.3 Variables and Measurement	51
4.3.1 Dependent Variable	52
4.3.2 Independent Variable	53
4.3.3 Control Variables	54
4.4 Econometric Model and Estimation Techniques	58
4.4.1 Panel Data Approach and Model Specification	58
4.4.2 Justification for Panel Data Regression	60
4.4.3 Fixed Effects (FE) Model	61
4.4.4 Random Effects (RE) Model	62
4.4.5 Hausman Specification Test	63
4.4.6 Diagnostic Tests for Model Validity	64
4.5 Data Processing and Implementation	65
4.5.1 Data Processing and Cleaning	66
4.5.2 Reliability and Validity of the Study	69
4.6 Use of Language and AI-Based Writing Tools	71
5 Findings	73
5.1 Descriptive Statistics	73
5.2 Correlation Analysis	75
5.2.1 Correlation Matrix Interpretation	75
5.2.2 Data Handling and Multicollinearity Considerations	78
5.3 Regression Results	79
5.3.1 Fixed Effects (FE) Model with Clustered Standard Errors (SE)	79
5.3.2 Random Effects (RE) Model using Generalized Least Squares (GLS)	82
5.3.3 Summary of Model Comparison and Justification of Final Estimation	84
5.3.4 Model Selection Using the Hausman Test	84
5.3.5 Summary of Regression Results: Key Findings	86
5.4 Hypothesis Evaluation	88
5.4.1 Hypothesis Testing and Interpretation	88
5.4.2 Comparison with Prior Research	91
5.5 Robustness Checks	94
5.5.1 Robustness Testing	94
5.5.2 Diagnostic Tests for Model Validity	95
5.5.3 Multicollinearity Test (Variance Inflation Factor - VIF Test)	95
5.5.4 Heteroskedasticity Test (Breusch-Pagan Test and Robust Standard Errors)	97
5.5.5 Autocorrelation Test (Wooldridge Test for Panel Data)	99

5.6 Robustness Checks Using Alternative Specifications	100
5.6.1 Alternative Performance Measures: Testing with ROA and ROE	100
5.6.2 Alternative Model Estimation: Random Effects using Generalized Least Squares vs. Fixed Effects with Driscoll-Kraay Standard Errors	102
5.6.3 Final Model Selection	104
5.7 Summary of the Findings	106
6 Conclusion	108
6.1 Theoretical Reflection and Purpose Alignment	108
6.2 Theoretical Contributions	110
6.3 Managerial and Industry Implication	111
6.4 Limitations of the Study	113
6.5 Future Research Directions	114
7 Summary	118
References	121
Appendices	131
Appendix 1 List of sampled food and allied companies	131
Appendix 2 Descriptive Statistics for Key Variables	132
Appendix 3 Correlation Matrix	133
Appendix 4 FE Model with ROA as the Dependent Variable	134
Appendix 5 FE Model with ROE as the Dependent Variable	134
Appendix 6 Illustrative Examples of AI-Assisted Conceptual Support	135

List of Figures

Figure 1: Conceptual Framework of Governance-Performance Relationship	37
---	----

List of Tables

Table 1: Summary of variables, formulas, and justifications	56
Table 2: Regression estimates from the FE model with clustered SE	80
Table 3: Regression estimates from the RE model using GLS	83
Table 4: Regression output using FE with clustered SE, (primary model for BEP)	86
Table 5: Summary of hypotheses, expected relationships, and empirical outcomes	89
Table 6: Comparative analysis of study findings with prior research on corporate governance and firm performance	92
Table 7: Variance Inflation Factor test for multicollinearity	96
Table 8: Breusch–Pagan Test and decision on heteroskedasticity presence	98
Table 9: Wooldridge Test for autocorrelation in panel data	99
Table 10: Comparison of regression results across alternative performance metrics (BEP, ROA, and ROE)	101
Table 11: FE regression with Driscoll–Kraay SE to address heteroskedasticity and cross-sectional dependence	102
Table 12: RE regression results estimated using GLS	103
Table 13: Overview of robustness checks including alternative specifications and diagnostic test outcomes	105

Definition of Key Terms

Basic Earning Power (BEP): Basic Earning Power (BEP) is defined as earnings before interest and taxes (EBIT) divided by total assets. It captures the operational efficiency of a firm by evaluating its ability to generate profits from its asset base, independent of capital structure and tax effects (Hoque & Islam 2023, 235; Imam et al. 2024, 94). BEP is particularly relevant in emerging markets where financial leverage and tax policy distortions may limit the comparability of traditional performance measures (Amanullah 2021, 44).

Board Independence: Board independence refers to the presence of non-executive directors who do not have a material or pecuniary relationship with the company, except for board compensation. These directors are expected to act as impartial monitors, ensuring transparency, protecting shareholder interests, and reducing agency conflicts between managers and owners (Fama & Jensen 1983, 314; Hermalin & Weisbach 1991, 104). In the context of emerging markets, board independence also serves to enhance regulatory compliance and external legitimacy, particularly when internal governance enforcement is weak (Safiullah et al. 2022, 3; Rashid 2018, 35).

Firm Performance: Firm performance refers to the efficiency with which a company utilizes its resources to generate financial and operational outcomes. It is commonly assessed using profitability-based indicators such as return on assets (ROA), return on equity (ROE), and earnings per share (EPS). In this study, performance is operationalized through Basic Earning Power (BEP), offering a neutral and leverage-independent measure of asset efficiency (Hung & Chou 2013, 369; Safiullah et al. 2022, 2).

Food and Allied Industry: The Food and Allied Industry encompasses firms involved in the production, processing, packaging, distribution, and retailing of food and beverage products. It includes both upstream (e.g., agriculture, raw ingredient sourcing) and downstream (e.g., manufacturing, logistics, sales) activities essential to ensuring food supply chains. In Bangladesh, this industry is one of the most regulated and economically significant sectors, with strict requirements around food safety, sustainability, and governance practices (Heller & Keoleian 2003, 1008; García-Martín & Herrero 2020, 74; BSEC, 2018).

1 Introduction

1.1 Background of the Study

Corporate governance has become a pivotal area of business research due to its role in ensuring transparency, accountability, and the protection of shareholder interests (Claessens & Yurtoglu, 2013). Board independence is considered a fundamental governance mechanism that enhances firm performance by mitigating managerial opportunism and reducing conflicts of interest between management and shareholders (García-Ramos & García-Olalla 2011, 222). Independent directors provide oversight that strengthens corporate decision-making, limits agency costs, and fosters investor confidence (Jiang et al. 2021, 2356). As corporate governance continues to evolve, understanding the impact of board independence on firm performance has become an essential area of inquiry (Bhagat & Bolton 2019, 145).

The significance of board independence is rooted in Agency Theory, which posits that managers (agents) may act in their own self-interest rather than maximizing shareholder value unless there are effective monitoring mechanisms in place (Fama & Jensen 1983, 314). Independent directors serve as key monitors, ensuring that corporate strategies align with shareholder interests and reducing the risk of managerial entrenchment (Bhagat & Bolton 2019, 146-147). In contrast, Resource Dependence Theory (RDT) argues that board independence contributes beyond oversight, providing access to critical external networks, expertise, and strategic guidance that enhance firm performance (Hillman & Dalziel 2003, 383; Amachukwu & Yahaya 2024, 143). These perspectives highlight the multifaceted role of independent directors in corporate governance.

Empirical studies provide mixed evidence on the relationship between board independence and firm performance. Another study suggest that a higher proportion of independent directors improves financial performance, increases firm valuation, and enhances risk management effectiveness (Habib et al. 2022, 138).

Independent boards have also been associated with better corporate social responsibility (CSR) practices, leading to improved reputation and stakeholder trust (García-Sánchez et al. 2019, 1288). However, other studies argue that board independence does not always translate into improved financial outcomes, particularly in cases where independent directors lack firm-specific knowledge or where regulatory enforcement is weak (Duru et

al. 2016, 4273). This underscores the need to assess board independence within specific industry and institutional contexts.

Emerging economies, characterized by rapid industrialization, evolving regulatory frameworks, and unique ownership structures, present a distinct context for corporate governance (Antwi et al. 2021, 99). Unlike developed markets where governance systems are well-established and rigorously enforced, emerging economies often exhibit weaker legal protections for shareholders, greater political influence on businesses, and higher ownership concentration, typically in the hands of family-controlled firms or state-owned enterprises (Alnabsha et al. 2018, 23). These structural differences impact the role and effectiveness of board independence in firm performance.

A defining feature of corporate governance in emerging economies is institutional voids, where legal, financial, and regulatory institutions lack the robustness needed to support effective governance (Puffer et al. 2016, 19). Due to these weaknesses, independent directors may struggle to exercise their oversight function effectively, as controlling shareholders often exert significant influence over board decisions (Antwi et al. 2021, 97). This results in a governance environment where board independence may be more symbolic than substantive, reducing its potential to enhance firm performance.

Studies on board independence in emerging markets present varied findings. Some research suggests that independent directors enhance firm performance by improving financial discipline and reducing expropriation risks associated with dominant shareholders (Boubaker & Nguyen 2018, 2).

However, other scholars argue that in markets where enforcement is weak, independent directors may be appointed merely to comply with regulatory requirements, leading to limited actual influence on strategic decisions (Paniagua et al. 2018, 233). Additionally, the effectiveness of board independence is often contingent on broader governance factors such as investor protection laws, the role of institutional investors, and the political environment (Hilger 2010, 127).

Another challenge facing board independence in emerging economies is the lack of a well-developed labor market for experienced independent directors. Unlike developed economies, where there is a large pool of qualified individuals to serve as independent directors, emerging markets often suffer from a talent gap, limiting the effectiveness of

board oversight (Al-Hadi et al. 2019, 143). Additionally, cultural norms play a crucial role, as business practices in emerging economies often emphasize relationships and loyalty over formal governance mechanisms, leading to challenges in ensuring genuine independence among board members (García-Sánchez et al. 2019, 1289).

Regardless of these challenges, regulatory efforts are being made to enhance board independence in emerging markets. Several countries, including China, India, and Brazil, have introduced stricter governance codes requiring higher proportions of independent directors on boards (OECD, 2023). While these reforms are a step forward, their effectiveness depends on strong enforcement mechanisms and broader institutional improvements (Kawai & Prasad, 2011). Do these structural reforms translate into actual performance gains for firms operating in institutionally weak environments? This question underscores the core research gap explored in the next section.

1.2 Research Gap

Despite extensive research on corporate governance and board independence, the relationship between board structure and firm performance remains underexplored in the context of emerging economies. Much of the literature has focused on developed markets, where regulatory enforcement, investor protections, and legal frameworks are relatively strong (Bhagat & Bolton 2019, 146; Hoque & Islam 2023, 234). These institutional conditions support the effective functioning of independent directors as monitors.

In contrast, emerging markets are marked by weak regulatory oversight, concentrated ownership, and institutional voids that fundamentally alter the effectiveness of board independence (Kumari 2023, 22; Wang & Young 2010, 9). These structural challenges have led to inconclusive empirical findings regarding the impact of board independence on firm performance (Paniagua et al. 2018, 232).

Recent studies continue to highlight that independent directors in emerging economies often lack meaningful influence due to dominance by controlling shareholders, poor enforcement mechanisms, and compliance-oriented board appointments (Ima et al. 2024, 365; Alnabsha et al. 2018, 36). In Bangladesh, where family-controlled firms and ownership concentration dominate the corporate landscape, independent directors may have limited authority in strategic matters, raising concerns that their roles are largely symbolic (Amanullah 2021, 43; Rashid & Hossain 2022, 938). These contextual

dynamics challenge the assumptions of traditional agency theory and underscore the need for more localized research.

A key limitation in the current literature is the assumption that board independence has a uniform impact across all industries, despite growing recognition that governance needs differ by sector (Boubaker & Nguyen 2018, 2). The Food and Allied Industry, in particular, presents distinct governance challenges due to its high regulatory burden, supply chain complexity, and public health accountability (García et al. 2020, 74; Fernando, 2020).

Independent directors in this sector are expected not only to oversee financial performance but also to ensure compliance with food safety laws, sustainability mandates, and operational risk management (Kumari 2023, 22). While some research has explored governance in broader agribusiness or consumer goods contexts however, there remains a lack of in-depth, sector-specific studies focused on food-sector governance in emerging economies (Jia et al. 2023, 8; Barois et al. 2024; IPES-Food, 2024).

Further complicating this issue is the overreliance on traditional financial metrics such as return on assets (ROA) and return on equity (ROE), which may not fully capture operational efficiency in resource-constrained environments (Duru et al. 2016, 4270). In contrast, Basic Earning Power (BEP)—which isolates a firm's core ability to generate earnings from its asset base—offers a theoretically robust and contextually appropriate alternative (Imam et al. 2024, 94; Hoque & Islam 2023, 234).

Despite its advantages, BEP remains underutilized in governance-performance studies, especially those examining board structure in emerging markets. Recent empirical efforts remain scarce; although a study have demonstrated BEP's potential, and none have investigated its application within Bangladesh's food industry (Safiullah et al. 2022, 3).

To address these gaps, the study investigates how board independence affects firm performance in Bangladesh's Food and Allied Industry, using BEP as the primary performance metric. It also incorporates structural board characteristics—such as board size, meeting frequency, and director attendance—to examine whether these elements interact with independence to shape firm outcomes.

By linking underexplored governance mechanisms to an industry-specific and contextually relevant performance measure, the study contributes to the development of

more tailored governance frameworks. These research objectives directly inform the study's conceptual framework and hypothesis development, aiming to clarify the role of board independence in environments marked by institutional fragility and sectoral complexity. In response to this gap, the study sets out a clearly defined purpose that guides its methodological and theoretical choices.

1.3 Research Purpose

This study seeks to examine the role of board independence in influencing firm performance within the Food and Allied Industry of Bangladesh. Although prior research has explored board structure in various contexts, little is known about how independent directors function within industry-specific and institutionally weak environments. Moreover, traditional performance measures such as ROA and ROE may not fully capture operational efficiency in resource-constrained economies, which justifies the use of BEP as the primary performance metric in this study.

Accordingly, the study aims to:

- Investigate the relationship between board independence and firm performance, measured using BEP, within publicly listed firms in Bangladesh's Food and Allied Industry.
- Assess how structural board characteristics and firm-specific controls moderate this relationship.

These characteristics and controls include board size, frequency of board meetings, independent director attendance, firm size, firm age, and total asset turnover. By focusing on a contextually grounded performance metric and industry-specific governance conditions, the study contributes to a more accurate and relevant understanding of board effectiveness in emerging economies. The following section outlines the structure of the thesis and how each chapter contributes to addressing the stated research purpose.

1.4 Structure of the Thesis

This thesis is organized into seven comprehensive chapters, each building logically on the previous to investigate the role of board independence in shaping firm performance within the Food and Allied Industry of Bangladesh.

Chapter 1 – Introduction lays the groundwork for the study by presenting the background, identifying key research gaps, and articulating the study’s purpose. It also introduces the theoretical underpinnings and research objectives, establishing the relevance of board independence in the context of emerging economies.

Chapter 2 – Literature Review and Hypothesis Development offers a critical examination of theoretical frameworks, primarily Agency Theory and RDT, which guide the study. It synthesizes empirical findings across developed and emerging economies and contextualizes the governance challenges specific to the Food and Allied Industry. This chapter also formulates the key hypotheses that are tested in the empirical analysis.

Chapter 3 – Empirical Context provides an overview of the Food and Allied Industry in Bangladesh. It discusses the sector’s structural features, market dynamics, regulatory environment, and the role of governance reforms, highlighting why this industry presents a meaningful setting for corporate governance analysis.

Chapter 4 – Methodology outlines the research design, sample selection, and variable definitions. It details the fixed-effects regression model applied to an unbalanced panel dataset and explains the rationale for using BEP as the primary performance metric. The chapter also discusses data processing, diagnostic tests, and model validity procedures to ensure robustness.

Chapter 5 – Findings presents the results of descriptive statistics, correlation analyses, and regression models. It evaluates the hypotheses, compares findings with prior literature, and conducts robustness checks using alternative specifications to ensure reliability.

Chapter 6 – Conclusion summarizes the research findings, discusses theoretical and practical contributions, addresses limitations, and provides policy recommendations. It also outlines directions for future research to extend the study’s scope in governance scholarship.

Chapter 7 – Summary provides a concise restatement of the study’s objectives, methodology, key findings, and contributions. This chapter serves as a final reflection, tying together the core insights and implications of the research.

Together, these chapters form a structured and coherent narrative that contributes to the broader understanding of how board independence influences firm performance in the unique institutional setting of an emerging economy.

2 Literature Review and Hypothesis Development

This literature review critically examines the existing research on board independence and firm performance by integrating theoretical perspectives, empirical evidence, and regulatory developments. It aims to clarify how independent directors influence firm outcomes across different institutional and industry contexts. The subsequent sections explore the theoretical foundations of board independence, evaluate empirical findings from developed and emerging markets, and analyze challenges and limitations associated with independent boards. Furthermore, this review identifies research gaps in corporate governance literature and suggests potential directions for future studies. By synthesizing diverse academic contributions, this chapter provides a comprehensive foundation for understanding the role of board independence in enhancing firm performance, particularly within the context of emerging economies.

2.1 Theoretical Framework: Agency and Resource Dependence Theories

A robust theoretical framework is essential for understanding how board independence influences firm performance in emerging economies. Various corporate governance theories attempt to explain the role of independent directors, but Agency Theory and Resource Dependence Theory (RDT) provide the most relevant lenses for this study.

Agency Theory serves as the primary theoretical lens, as it directly explains the governance role of independent directors in mitigating agency conflicts and enhancing firm oversight (Jensen & Meckling 1976, 308). RDT functions as a supporting theoretical lens, providing additional insights into how independent directors contribute beyond monitoring by offering strategic resources and external networks (Pfeffer & Salancik 1978, 1-2).

While Agency Theory provides the primary lens for this study by focusing on internal governance mechanisms and the mitigation of managerial opportunism. It does not fully capture the broader environmental and institutional factors that shape board behavior—particularly in emerging markets. RDT is therefore adopted as a complementary perspective to address these limitations. RDT emphasizes the board's role in securing critical external resources and navigating environmental uncertainty, where regulatory complexity, supply chain vulnerabilities, and institutional

weaknesses can constrain board independence (Amachukwu & Yahaya 2024, 143; Haque & Arun 2016, 229). By integrating RDT, this study acknowledges that boards are not only internal monitors but also boundary-spanning actors who must manage external dependencies in order to enhance firm performance.

While other corporate governance theories, such as Stakeholder Theory and Stewardship Theory, provide alternative perspectives, they are not the focus of this study due to their theoretical limitations in explaining board independence's direct impact on firm financial performance.

Stakeholder Theory emphasizes the need to balance the interests of multiple stakeholders, including employees, customers, suppliers, and society (Freeman 1984, 25; Donaldson & Preston 1995, 65). While this theory is useful in CSR studies, it is less relevant in explaining how board independence directly impacts firm financial performance (Yassin 2021, 231). Given that this study focuses on the financial outcomes of governance mechanisms, Stakeholder Theory is not appropriate.

On the other hand, Stewardship Theory assumes that managers act as responsible stewards of shareholder wealth, requiring minimal oversight (Donaldson & Davis 1991, 52). This contradicts Agency Theory, which is based on the premise that managers have incentives to act in their own interest unless strong monitoring mechanisms are in place. In emerging markets, where ownership concentration and weak regulatory enforcement create heightened risks of managerial opportunism, Stewardship Theory does not align with the realities of governance challenges (Rashid 2018, 35).

Thus, Agency Theory and RDT provide a more suitable framework, as they collectively explain both the monitoring role of independent directors (Agency Theory) and their resource-providing function (RDT).

2.1.1 Agency Theory and Board Independence

Agency Theory provides the primary theoretical foundation for understanding the role of board independence in corporate governance, particularly in mitigating conflicts of interest between shareholders and management. The theory posits that in firms where ownership and control are separated, managers may act opportunistically, prioritizing personal interests over shareholder value. Agency Theory also suggests that a higher

proportion of independent directors enhances board oversight, reduces agency conflicts, and strengthens managerial accountability, which in turn improves firm performance (Jensen & Meckling 1976, 308).

Independent directors serve as external monitors tasked with reducing agency costs by ensuring managerial accountability, financial transparency, and adherence to shareholder interests (Fama & Jensen 1983, 314). In well-regulated markets, board independence is widely associated with improved financial oversight and enhanced firm performance (Bhagat & Bolton 2019, 147). However, the effectiveness of independent directors in emerging economies remains a subject of debate due to institutional constraints and governance challenges (Kaya & Aslan 2013, 3).

In emerging economies such as Bangladesh, where institutional voids and regulatory inefficiencies persist, the role of independent directors is often constrained by the dominance of controlling shareholders (Ima et al. 2024, 359). Many firms in these markets operate under ownership structures that allow family-owned entities or state-controlled enterprises to exert disproportionate influence over board decisions. This concentration of control often limits the ability of independent directors to function as effective monitors, as their decision-making authority is significantly weaker than in developed economies with stronger governance frameworks (Haque & Arun 2016, 231). Consequently, independent directors may become symbolic figures rather than active agents of corporate accountability, raising concerns about the true impact of board independence on firm performance in these contexts (Kapil & Mishra 2019, 2048).

In highly regulated industries such as the Food and Allied Industry, agency problems may be more pronounced due to the complex interplay between compliance requirements, supply chain risks, and managerial discretion. Firms in this sector are subject to stringent regulatory frameworks designed to uphold food safety, environmental standards, and ethical sourcing practices (García et al. 2020, 78). Given the high stakes of regulatory non-compliance, independent directors are expected to enforce corporate governance mechanisms that ensure managerial adherence to legal and ethical obligations.

However, in weak institutional settings, regulatory capture and board entrenchment may reduce their ability to challenge executive decisions effectively (Kapil & Mishra

2019, 2049). This study seeks to examine how agency conflicts manifest in the Food and Allied Industry and whether independent directors in this sector genuinely contribute to improved governance outcomes or merely serve as regulatory compliance figures.

While Agency Theory provides a critical explanation for the role of independent directors as monitors, it does not fully capture their broader strategic contributions. Firms operating in industries with high regulatory complexity and external dependencies often require directors who can provide valuable industry expertise, facilitate resource acquisition, and enhance corporate legitimacy.

This study incorporates RDT as a complementary lens to address these limitations. The following section explores how RDT expands upon Agency Theory by emphasizing the resource-providing role of independent directors, particularly in industries where governance effectiveness depends not only on internal controls but also on external relationships and regulatory alignment.

2.1.2 Resource Dependence Theory and Board Independence

Resource Dependence Theory (RDT) provides a complementary perspective to Agency Theory by emphasizing the strategic contributions of independent directors beyond their conventional monitoring roles. While Agency Theory conceptualizes independent directors primarily as external monitors who mitigate agency conflicts between shareholders and management (Jensen & Meckling 1976, 308; Fama & Jensen 1983, 314-315), RDT argues that board members serve as critical resource providers who help firms navigate complex external environments (Pfeffer & Salancik 1978, 1-2).

In industries where regulatory scrutiny, supply chain dependencies, and strategic partnerships significantly influence firm success, independent directors contribute by offering access to valuable external networks and enhancing legitimacy. They also facilitate strategic decision-making. (Hillman et al. 2009, 1404).

Recent empirical studies reinforce the idea that independent directors are particularly crucial in regulated industries, where firms must maintain legitimacy with regulatory bodies, investors, and other stakeholders (Kumari 2023, 25). In industries such as financial services, pharmaceuticals, and energy, independent directors leverage their

expertise and external affiliations to help firms comply with evolving regulations, build industry connections, and secure financial resources (Amachukwu & Yahaya 2024, 145).

The Food and Allied Industry, which operates within a highly regulated landscape, further exemplifies the strategic role of independent directors. This sector is subject to stringent food safety standards, environmental regulations, and sustainability initiatives, requiring governance structures that extend beyond financial oversight to regulatory compliance and strategic resource acquisition (García et al. 2020, 78-79).

In emerging markets like Bangladesh, institutional voids and weak regulation challenge effective governance. RDT suggests that independent directors serve both as governance monitors and as links to external legitimacy and resources. Given that many firms in the Food and Allied Industry operate under concentrated ownership structures, controlling shareholders often dominate board decision-making, limiting managerial autonomy and board accountability (Miller & Le Breton-Miller, 2005).

In such environments, independent directors can bridge the gap by providing firms with access to external capital markets, facilitating relationships with government agencies, and ensuring compliance with international food safety standards (Millar et al. 2005, 164). Empirical studies in emerging markets have demonstrated that firms with a higher proportion of independent directors tend to have stronger regulatory compliance records and greater investor confidence, supporting the argument that board independence extends beyond traditional monitoring functions (Ooko 2024, 53).

Moreover, independent directors enhance firms' ability to adapt to external shocks, such as supply chain disruptions and regulatory changes, by providing strategic insights and fostering relationships with key industry players (Young 2003). Their role in ensuring transparency in supply chain management is particularly relevant in the Food and Allied Industry, where unethical sourcing practices and food contamination risks can severely damage brand reputation and financial performance (Barois et al. 2024). By leveraging external networks and institutional knowledge, independent directors contribute to proactive risk management and sustainable business practices (Kumari 2023, 27).

This theoretical lens positions independent directors as not only governance monitors but also as valuable strategic assets in industries where regulatory complexity and stakeholder expectations necessitate a more dynamic approach to corporate oversight. By integrating RDT with Agency Theory, this study provides a more holistic perspective on the role of board independence, particularly in the context of the Food and Allied Industry in an emerging market setting.

By integrating these two perspectives, this study ensures a comprehensive understanding of board independence and firm performance in emerging economies. Building on this theoretical foundation, the next section explores how firm performance is typically measured in corporate governance research—highlighting both accounting-based and market-based metrics that serve as empirical tools for evaluating governance outcomes.

2.2 Measuring Firm Performance in Corporate Governance Research

The foundation of modern corporate governance, particularly the emphasis on board independence and accountability. It was laid by the Cadbury Report in the UK, which formally introduced the principle of separating ownership from control to reduce agency conflicts (Cadbury, 1992). Assessing the relationship between board independence and firm performance requires the use of reliable and well-established performance metrics.

Governance research predominantly relies on accounting-based and market-based indicators to evaluate how board characteristics influence financial outcomes (Bhagat & Bolton 2019, 162). However, the effectiveness of these metrics varies across different economic contexts, particularly between developed and emerging economies. In developed markets, both accounting and market-based measures are widely used due to strong regulatory environments and efficient financial markets. In contrast, emerging economies often rely more on accounting-based indicators due to greater market volatility, weaker investor protection, and inconsistent financial reporting standards (Ima et al. 2024, 365).

To empirically investigate the governance-performance relationship outlined in the theoretical framework, it is essential to understand how firm performance is measured in the literature. This section examines the most widely used performance indicators, their theoretical foundations, and their relevance in both developed and emerging economic

contexts. Particular emphasis is placed on the rationale for selecting BEP as the primary performance metric in this study.

2.2.1 Accounting-Based Performance Metrics

Accounting-based metrics are widely employed in governance research as they directly assess a company's operational efficiency and financial performance. These measures provide insight into how effectively a firm utilizes its assets, manages its capital, and generates shareholder value (Fich & Shivdasani 2006, 697). The most commonly used accounting-based indicators include Return on Assets (ROA), Return on Equity (ROE), and Basic Earning Power (BEP).

ROA is a widely accepted measure of firm efficiency, capturing how effectively a company utilizes its total assets to generate profits. A higher ROA suggests strong managerial performance and resource utilization, making it a key indicator of governance quality (Kaya & Aslan 2013, 4-5). Studies on developed economies have found that firms with independent boards often report higher ROA, as independent directors enhance monitoring and reduce agency conflicts (Coles et al. 2014, 1766). However, ROA has several limitations. Since it depends on total assets, it can be influenced by capital structure variations, industry-specific asset intensities, and discretionary accounting policies. Additionally, in emerging economies, where financial transparency is weaker, reported asset values may not always reflect actual economic conditions, reducing ROA's reliability (Abdullah et al. 2024, 17).

ROE evaluates a firm's ability to generate profits from shareholders' equity, providing insight into how effectively governance structures support shareholder value creation (Bhagat & Bolton 2019, 164-165). A higher ROE is typically associated with better corporate governance, lower agency conflicts, and strong financial oversight. Despite its advantages, ROE has several limitations in cross-country comparisons. Since emerging economies often have highly leveraged firms, differences in financial leverage can distort ROE values, making it less comparable across firms operating in different regulatory and financial environments (Safiullah et al. 2022, 3-4).

Among the widely used accounting-based indicators, **BEP** has been selected as the primary measure of firm performance in this study. BEP, calculated as operating profit (EBIT) divided by total assets, assesses a firm's ability to generate earnings from its assets

while excluding the effects of capital structure, tax policies, and financial leverage decisions (Kaya & Aslan 2013, 4).

BEP is particularly relevant for this study for several reasons. Unlike ROA and ROE, which are susceptible to variations in financial leverage and taxation policies, BEP provides a more neutral measure of operational efficiency, making it a better indicator for cross-firm comparisons, particularly in markets where financial reporting practices vary (Imam et al. 2024, 94). In emerging economies, where firms often experience fluctuations in interest rates, capital access, and tax incentives, ROA and ROE can be distorted by discretionary accounting practices, while BEP remains a more stable measure of core operating performance (Safiullah et al. 2022, 8).

Several empirical studies reinforce the reliability of BEP in governance research. A study on South Asian firms found that BEP was a strong predictor of long-term firm value, particularly in environments with high financial risk and regulatory uncertainty (Kaya & Aslan 2013, 5). Similarly, research on African and Latin American markets found that firms with strong governance mechanisms and independent boards exhibited higher BEP values, indicating better resource utilization and corporate efficiency (Boubaker & Nguyen 2018, 4). In contrast, studies from developed economies, such as the U.S. and Europe, have demonstrated that while Tobin's Q and ROE are frequently used, BEP remains one of the most reliable indicators for assessing operational performance independent of capital structure effects (Coles et al. 2014, 1768).

Recent studies have begun to explore BEP in emerging market contexts, showing its relevance in capturing operational performance. For example, BEP has been shown to be effective in analyzing earnings management in Nepalese banks (Imam et al. 2024). It has also been identified as a strong predictor of intrinsic value in Iraqi industrial firms (Al-Ali & Al-Shabeeb, 2024). Despite these advances, BEP remains underutilized in governance-performance studies, especially in sector-specific contexts like the Food and Allied Industry in Bangladesh.

Given these advantages, BEP is the most appropriate measure for this study, particularly in the context of emerging economies where financial structures are often volatile and traditional financial ratios may be distorted by macroeconomic factors. This ensures a robust, reliable, and comparable evaluation of firm performance across different governance environments. However, to fully capture the scope of firm performance

measurement in governance study, it is also important to examine market-based indicators, which offer a contrasting yet complementary perspective.

2.2.2 Market-Based Performance Metrics

Market-based indicators provide an external assessment of firm value and governance effectiveness by incorporating investor sentiment, market expectations, and stock price movements (Coles et al. 2014, 1760). These metrics are widely used in developed economies, where capital markets are efficient, and corporate disclosures are transparent.

Tobin's Q is one of the most widely used market-based indicators in corporate governance studies. Defined as the ratio of a firm's market value to the replacement cost of its assets, Tobin's Q provides an external assessment of investor confidence in a firm's governance mechanisms and expected profitability (Adams & Ferreira 2009, 298). A high Tobin's Q suggests that investors perceive the firm's governance positively, associating independent boards and effective governance mechanisms with future profitability (Safiullah et al. 2022, 3-4).

Despite its frequent use in corporate governance research, Tobin's Q has several limitations, particularly in emerging economies. Stock markets in many developing countries are marked by high volatility, speculative trading, and weak regulatory oversight, making market-based indicators less reliable for assessing governance effectiveness (Kalash 2021, 13). Firms with strong financial fundamentals may register low Tobin's Q due to external factors such as currency instability, inflation, or market inefficiencies rather than weak internal governance (Amachukwu & Yahaya 2024, 151).

These issues are especially relevant in Bangladesh, where capital markets are relatively illiquid and investor sentiment often diverges from firm fundamentals (Kalash 2021). Further complications arise from limited disclosure and pricing inefficiencies in the Dhaka Stock Exchange (DSE), reduces the reliability of Tobin's Q as a governance metric (Rashid 2018, 41). Given these contextual challenges, Tobin's Q is not used as the primary performance measure in this study, although it remains relevant for broader valuation and investor perception discussions.

ln(Total Assets), which captures firm size and revenue growth over time, is frequently used as a control variable in governance research (Boone et al. 2007, 88). Firm size is often associated with economies of scale, resource availability, and market power, which

can influence the governance-performance relationship. While larger firms typically have stronger governance mechanisms, some studies suggest that larger boards in emerging economies may become inefficient due to coordination challenges and bureaucratic delays (Imam et al. 2024, 94). Thus, firm size (natural log of Total Assets) is considered a control variable rather than a primary performance indicator in this study.

While BEP serves as this study's core performance measure, additional firm-level characteristics are also included as control variables in later sections—namely, firm size, firm age, and total asset turnover (TAT). These factors are examined separately due to their theoretical and empirical relevance in determining firm-specific variation and operational scale. Having established how firm performance is measured in governance research, the next section turns to prior research on board independence in the Food and Allied Industry.

2.3 Board Independence in the Food and Allied Industry

The Food and Allied Industry plays a vital role in national economies, contributing significantly to employment generation, food security, and industrial growth. Its highly regulated nature and complex supply chains make effective corporate governance essential for maintaining compliance with food safety laws, sustainability requirements, and ethical business practices (García et al. 2020, 74). In this context, board independence has emerged as a critical mechanism for strengthening oversight and enhancing accountability, particularly in addressing regulatory risk, supply chain transparency, and reputational challenges (Enilolobo et al. 2019, 2). Unlike other industries where independent directors serve primarily as monitors of financial performance, those in the food sector are expected to ensure compliance with health and safety mandates, supervise ethical sourcing practices, and oversee sustainability reporting (Kumari 2023, 23).

Regulatory bodies such as the U.S. Food and Drug Administration (FDA), the European Food Safety Authority (EFSA), and national food safety commissions in emerging economies enforce strict standards to prevent health risks, unethical labor practices, and environmental degradation (García-Sánchez et al. 2019, 1290). Non-compliance can result in legal penalties, product recalls, and loss of consumer trust, placing additional pressure on boards to operate effectively (Gangi et al. 2020, 614).

Empirical research on board independence in this industry has produced mixed findings. Some studies suggest that firms with a higher proportion of independent directors demonstrate stronger compliance performance, better financial outcomes, and improved risk management (Fernando, 2020; García et al. 2020, 74-75). A study on Indonesian food corporations found that independent boards were more likely to initiate sustainability initiatives and strengthen regulatory accountability (Ahmad et al. 2022, 3). Similarly, evidence from U.S. shows that independent directors play a key role in ensuring ethical conduct, reducing operational risks, and improving transparency (García-Sánchez et al. 2019, 1291).

In emerging economies, however, these benefits are not guaranteed. Independent directors often face institutional barriers such as weak enforcement, insider influence, and board capture, particularly in family-owned or state-influenced firms (Wang & Young 2010, 8; Claessens & Yurtoglu 2013, 22). Research from Latin America and Asia shows that board independence only improves performance when supported by strong institutional frameworks and effective enforcement mechanisms (Boubaker & Nguyen 2018, 2-3). In Bangladesh, for example, many food sector firms appoint independent directors primarily to fulfill regulatory requirements, without granting them substantive oversight power (Rashid 2018, 44).

Another factor that determines the effectiveness of independent boards is the industry-specific expertise of directors. Studies indicate that directors with prior experience in regulatory affairs, sustainability, or supply chain management are more likely to engage meaningfully with complex industry challenges (García et al. 2020, 75). In a sector like food processing, where product safety, global compliance standards, and rapid shifts in consumer demand intersect, such experience is often critical for proactive governance.

The unique regulatory burdens and ethical expectations in the Food and Allied Industry make it an ideal context for evaluating the impact of board independence. While independent directors are theoretically expected to enhance firm performance by reducing agency costs and increasing transparency, their actual influence is shaped by contextual governance conditions, including regulatory enforcement and ownership dynamics. This study therefore aims to test whether board independence—measured by the proportion of independent directors—has a positive impact on firm performance in the food sector of an emerging economy.

Given the regulatory complexity and governance demands of the Food and Allied Industry, the presence of independent directors is expected to enhance compliance oversight, transparency, and risk mitigation (García et al. 2020, 75; Kumari 2023, 25). These functions are especially valuable in emerging markets like Bangladesh, where institutional support is limited and enforcement mechanisms are weak (Enilolobo et al. 2019, 4; Rashid & Hossain 2022, 939). Therefore, a higher Independent Director Ratio (IDR) is hypothesized to positively influence firm performance, as measured by BEP.

Given these findings, this study proposes the following hypothesis:

H₁: A higher Independent Director Ratio is positively associated with BEP

This hypothesis is rooted in Agency Theory, which argues that board independence strengthens monitoring and mitigates managerial opportunism. However, given the complexity of the food industry and institutional gaps in markets like Bangladesh, the empirical validity of this relationship remains to be tested. Beyond independence, other board characteristics also warrant examination due to their influence on governance effectiveness

2.4 Board Characteristics and Structural Board Influence on Firm Performance

Corporate boards serve as the central governing body within organizations, playing a crucial role in shaping corporate strategy, financial decision-making, and risk management. While board independence is a key governance mechanism, other board characteristics—such as board size, meeting frequency, and director attendance—further influence governance quality and firm performance (Tricker 2015).

Board characteristics are particularly relevant in emerging economies, where governance challenges such as ownership concentration, weak legal enforcement, and compliance-driven board structures can either amplify or diminish the effectiveness of corporate boards (Hoque & Islam 2023, 236). Unlike developed economies, where independent directors function within strong institutional frameworks, emerging markets often present structural limitations that affect how board characteristics interact with firm performance (Young et al. 2008, 201).

Beyond board independence, structural characteristics such as board size, meeting frequency, and director attendance are central to how boards influence firm outcomes—particularly in sectors with complex regulatory demands like the Food and Allied Industry. These attributes are theoretically supported by both Agency Theory and RDT, offering distinct but complementary perspectives. From the agency viewpoint, these elements shape a board's internal control capacity: larger boards may broaden monitoring capabilities, frequent meetings allow for timely oversight, and high attendance reflects greater director diligence and accountability (Jensen & Meckling 1976, 338; Adams & Ferreira 2009, 292).

On the other hand, RDT suggests that structural characteristics also determine a board's capacity to engage with external actors and manage uncertainty. Regular participation and larger, more diverse boards can enhance access to critical resources, networks, and institutional legitimacy—factors particularly important in emerging markets where regulatory systems may be underdeveloped (Hillman & Dalziel 2003, 384; Amachukwu & Yahaya 2024, 143). Thus, these board-level traits do not operate in isolation but work alongside board independence to shape governance effectiveness within institutionally constrained environments.

The following sub-sections explore how specific board characteristics—board size, meeting frequency, and director attendance—relate to governance effectiveness and firm performance.

2.4.1 Board Size and Firm Performance

Board size has been extensively studied as a determinant of governance efficiency, influencing board dynamics, oversight effectiveness, and decision-making processes. Larger boards bring diverse expertise, a broader range of perspectives, and stronger risk monitoring capacity, but they can also suffer from coordination inefficiencies and diluted accountability (Coles et al. 2014, 1771; Yermack 1996, 197).

In developed economies, research suggests that mid-sized boards (8–12 members) balance expertise with decision-making efficiency (Boone et al. 2007, 91). A study of U.S. and European firms found that companies within this range demonstrated higher ROA and stronger shareholder protection compared to those with excessively large or small boards (Bhagat & Bolton 2019, 163).

In emerging markets, board size often takes on a different role. Due to institutional voids and weaker governance enforcement, larger boards may be necessary to navigate regulatory complexities and increase external legitimacy (Abdullah et al. 2024, 12). Studies on Malaysian and Singaporean firms suggest that firms with larger boards tend to perform better in environments with weak legal protections, as independent directors provide additional oversight and credibility (Ahmad et al. 2022, 7). However, in cases where family-controlled businesses dominate corporate structures, larger boards may actually increase conflicts, reinforce managerial entrenchment, and limit independent decision-making (Rashid 2018, 41).

Given these findings, this study proposes the following hypothesis:

H₂: Board Size has a significant effect on BEP

This hypothesis aligns with RDT's argument that larger, more resourceful boards contribute to firm performance by facilitating access to external knowledge, capital, and strategic partnerships. This discussion strengthens the hypothesis by emphasizing that in emerging markets, larger boards may enhance governance effectiveness due to institutional challenges, though their actual impact depends on ownership concentration and regulatory enforcement.

2.4.2 Board Meetings and Governance Effectiveness

Board meetings serve as the primary mechanism for directors to oversee management, evaluate financial performance, and engage in strategic planning (Vafeas 1999, 113). The frequency and quality of these meetings influence board effectiveness, investor confidence, and firm transparency (Brick & Chidambaran 2010, 535).

In developed markets, frequent board meetings are generally associated with stronger governance outcomes. Research suggests that companies with at least four board meetings per year experience lower earnings manipulation, greater financial transparency, and improved shareholder value (Jensen 1993, 845; Carcello et al. 2011, 17). However, some studies caution that excessive meetings can be counterproductive, leading to reactive decision-making rather than proactive strategic governance (Ooko 2024, 56).

In emerging economies, board meetings play an even more critical role, given the higher risks of corporate mismanagement and regulatory weaknesses (Antwi et al. 2021, 104). However, merely holding meetings does not always translate into effective governance. Studies on Malaysian and Indonesian firms indicate that while firms formally comply with board meeting mandates, the quality of discussions and director engagement varies significantly (Ahmad et al. 2022, 8). This suggests that symbolic compliance with board meeting requirements may not be sufficient to improve governance outcomes.

Given these findings, this study proposes the following hypothesis:

H₃: The frequency of Board Meetings is positively associated with BEP

This discussion strengthens the hypothesis by emphasizing the need for meaningful board engagement rather than just regulatory compliance with meeting mandates.

2.4.3 Board Attendance and Director Engagement

Board attendance is a critical indicator of director engagement and governance effectiveness. High attendance rates suggest active participation and commitment to oversight responsibilities, whereas poor attendance often signals weak board engagement, governance inefficiencies, and managerial dominance (Adams & Ferreira 2009, 292-293).

Studies in developed markets consistently find a strong positive relationship between director attendance and firm performance. Research on S&P 500 firms indicates that firms with high board attendance rates tend to have stronger financial transparency, reduced agency costs, and greater investor confidence (Fich & Shivdasani 2006, 701-702). Regulatory bodies such as the U.S. SEC and UK Corporate Governance Code mandate that firms disclose director attendance records, reinforcing its significance in governance assessments (OECD, 2023).

In emerging economies, however, compliance with board attendance requirements is often superficial. Studies on Indonesian, and Malaysian firms indicate that while directors formally attend meetings, their actual involvement in governance activities varies significantly (Ahmad et al. 2022, 8-9). This raises concerns about whether attendance alone is a sufficient measure of board effectiveness, as directors may be present but lack

the authority or expertise to actively contribute to decision-making (Abdullah et al. 2024, 15).

Given these findings, this study proposes the following hypothesis:

H4: Board Attendance is positively associated with BEP.

By expanding on earlier empirical evidence, this discussion clarifies that mere attendance is not enough—directors must be actively engaged in governance processes to drive positive firm outcomes.

The empirical evidence suggests that board size, board meetings, and director attendance play a crucial role in shaping firm performance. However, their effectiveness is highly contextual, particularly in emerging markets, where governance challenges such as ownership concentration, weak legal enforcement, and compliance-driven board structures may limit their impact.

By reinforcing the hypotheses previously introduced, this section provides a deeper theoretical and empirical foundation for understanding how board characteristics influence financial performance in emerging economies, particularly in relation to BEP.

The next section explores firm-specific factors, such as firm size, firm age, and TAT, that further interact with board characteristics to influence performance outcomes. It is important to note, however, that the empirical inclusion of board attendance will depend on data diagnostics performed during the analysis phase, which may limit the ability to formally test this hypothesis.

2.5 Firm-Specific Determinants of Operational Efficiency

Firm performance is influenced not only by governance mechanisms, such as board independence and board characteristics, but also by firm-specific factors that shape financial outcomes. While corporate governance plays a critical role in ensuring transparency, accountability, and strategic decision-making, factors such as Total Asset Turnover (TAT), Firm Size, and Firm Age influence how efficiently a company utilizes its resources, scales operations, and sustains profitability over time (Hoque & Islam 2023, 235).

Understanding these firm-specific determinants is crucial, as they act as control variables in governance research, ensuring that observed relationships between board independence and firm performance are not driven by structural differences between firms. This section explores the empirical evidence on TAT, Firm Size, and Firm Age, analyzing their impact on BEP, the study's primary performance metric.

TAT is a widely recognized financial ratio that measures how efficiently a company utilizes its assets to generate revenue. It is calculated as net sales divided by total assets, reflecting a firm's operational efficiency and its ability to convert investments in assets into revenue streams (Kirca et al. 2011, 59). Firms with higher TAT are generally considered more efficient, as they can generate more revenue per unit of asset investment, leading to improved financial performance (Boubaker & Nguyen 2018, 3).

In developed economies, where financial markets are mature and corporate governance frameworks are well-established, TAT has been positively associated with firm profitability. A study of S&P 500 firms found that companies with higher asset turnover ratios reported stronger financial performance, lower costs of capital, and increased investor confidence (Coles et al. 2014, 1776). Similarly, research on European-listed firms demonstrated that firms with efficient asset utilization tend to have higher BEP, as they maximize revenue generation from existing resources (Abdullah et al. 2024, 13).

However, in emerging economies, the relationship between TAT and firm performance is more complex. Many British firm operates in environments with weak infrastructure, limited access to capital, and supply chain inefficiencies, all of which can constrain asset utilization efficiency (Gangi et al. 2020, 613). Studies on Bangladeshi and Indian firms have shown that while higher TAT is generally associated with better profitability, firms with inadequate financial management and outdated asset structures struggle to maintain strong turnover ratios (Tien 2020).

Given the theoretical and empirical evidence, this study hypothesizes that:

H₅: TAT is positively associated with BEP

This hypothesis reflects the argument that firms with greater asset efficiency experience superior financial performance, particularly in resource-constrained environments where effective asset management is critical.

Firm size is one of the most widely studied determinants of corporate financial performance, as larger firms generally benefit from economies of scale, stronger access to financial resources, and greater market power (Bhagat & Bolton 2019, 162-163). Larger firms often have more diversified revenue streams, improved risk management capabilities, and stronger bargaining power with suppliers and financial institutions, which can enhance long-term profitability (Imam et al. 2024, 94).

Empirical research in developed economies suggests that firm size is positively correlated with financial performance. A study of U.S. and European multinational corporations found that larger firms consistently outperformed smaller firms in terms of profitability, shareholder value, and resilience to economic downturns (Coles et al. 2014, 1756). Additionally, research on Japanese and German manufacturing firms demonstrated that larger firms were better positioned to invest in innovation, expand into global markets, and attract institutional investors, all of which contributed to higher financial performance (Adams & Ferreira 2009, 295).

However, in emerging economies, the size-performance relationship is not always linear. While larger firms tend to have stronger financial fundamentals, they may also face bureaucratic inefficiencies, slower decision-making processes, and higher operational costs, which can reduce profitability (Alber & Hameed 2025, 170). Studies on Bangladeshi firms indicate that while firm size generally leads to higher profitability, overly large organizations often suffer from inefficiencies that erode financial performance (Hoque & Islam 2023, 237).

Given these findings, this study proposes the following hypothesis:

H₆: Firm Size is positively associated with BEP

This hypothesis captures the idea that larger firms have competitive advantages that enhance financial performance, though their effectiveness may depend on governance efficiency and operational structure.

Firm age plays a crucial role in financial performance, as older firms typically possess established market positions, stronger customer relationships, and accumulated industry knowledge. Long-standing firms often benefit from organizational learning, brand reputation, and historical financial stability, allowing them to navigate economic uncertainties more effectively (Pervan et al. 2017).

Empirical research on developed economies suggests that firm age is positively correlated with financial performance. A study of publicly listed firms in the U.S. and Europe found that older firms demonstrated greater financial resilience, lower default risk, and stronger investor confidence compared to younger firms (Coles et al. 2014, 1778). Additionally, research on European pharmaceutical firms indicated that firms with longer operational histories were more likely to sustain profitability and adapt to market changes through strategic innovation (Adams & Ferreira 2009, 294).

However, in emerging economies, the relationship between firm age and financial performance is more ambiguous. While older firms benefit from market experience and established networks, they may also suffer from organizational inertia, reduced innovation capacity, and slower adaptability to new technologies (Papangkorn 2020, 1095). Study on Croatian food industry reveal that while older firms generally maintain stable financial performance, their ability to compete with younger, more agile firms may diminish over time (Pervan et al. 2017, 5).

Given these contrasting perspectives, the following hypothesis is proposed:

H₇: Firm Age is positively associated with BEP

This hypothesis reflects the argument that firm age enhances financial performance through accumulated experience and market positioning, though its benefits may be contingent on innovation capacity and adaptability to industry changes.

Firm-specific factors such as TAT, Firm Size, and Firm Age play a crucial role in shaping financial performance outcomes. While corporate governance mechanisms influence firm performance through board independence and structural governance factors, firm-specific financial determinants provide additional explanatory power in understanding why some firms perform better than others, even under similar governance conditions.

By incorporating TAT, Firm Size, and Firm Age as control variables, this study ensures a more robust analysis of the relationship between board independence and firm performance in emerging economies.

The choice of performance metrics varies significantly between developed and emerging economies, due to differences in financial market efficiency, regulatory environments, and corporate governance standards. Developed economies rely on a combination of

accounting-based and market-based indicators, as capital markets are efficient and governance mechanisms are well-established (Alnabsha et al. 2018, 31). While emerging economies predominantly rely on accounting-based measures (Safiullah et al. 2022, 4).

Additionally, financial reporting inconsistencies in emerging markets can affect the reliability of accounting measures. Studies on firms in Bangladesh highlight the prevalence of earnings management practices, inconsistent disclosure requirements, and weaker enforcement of corporate governance codes (Jia et al. 2023, 7). This ensures robust, reliable, and comparable performance evaluation across firms operating in diverse regulatory and institutional environments.

Together, these firm-specific and governance-related factors provide the theoretical and empirical foundation for this study's conceptual model. The following section synthesizes these variables into a structured framework to guide hypothesis testing.

2.6 Conceptual Framework Development

Recent studies continue to explore the relationship between board independence and firm performance, particularly in emerging markets. For instance, a study found that board independence positively influences firm performance during periods of negative demand shocks, highlighting the importance of independent oversight in volatile market conditions (Hoque & Islam 2023, 237). Similarly, another study demonstrated that board independence enhances financial performance in Vietnamese firms, with market competition serving as a mediating factor (Ngo et al. 2023).

In the context of Bangladesh, one recent study emphasized that the expertise of board members, particularly those with advanced degrees or professional qualifications, significantly contributes to firm performance (Ima et al. 2024, 366). Their findings suggest that board independence amplifies the positive effects of such expertise, underscoring the combined importance of independence and specialized knowledge in corporate governance.

These studies collectively indicate that the effectiveness of board independence is influenced by contextual factors such as market conditions, regulatory environments, and the specific expertise of board members. This underscores the need for a nuanced approach to corporate governance in emerging economies, where institutional frameworks and market dynamics differ from those in developed countries.

Building on these insights, this study develops a conceptual framework integrating Agency Theory and RDT to examine how board independence and related characteristics affect firm performance in Bangladesh's Food and Allied Industry. This framework aims to provide a context-specific understanding of corporate governance mechanisms in an emerging market setting.

Drawing from theoretical perspectives and empirical insights, this study formulates the following hypotheses to examine the board independence-firm performance relationship:

H1: A higher Independent Director Ratio is positively associated with BEP.

H2: Board Size has a significant effect on BEP.

H3: The frequency of Board Meetings is positively associated with BEP.

H4: Board Attendance is positively associated with BEP.

H5: TAT is positively associated with BEP.

H6: Firm Size is positively associated with BEP.

H7: Firm Age is positively associated with BEP.

This synthesis draws from theoretical models, empirical evidence, and sector-specific governance issues to build a focused foundation for the study. While board independence is expected to improve firm performance, its effectiveness often depends on institutional quality, regulatory enforcement, and industry-specific risks. The hypotheses developed here target this governance-performance link within an emerging economy and a highly regulated sector, addressing a critical gap in the corporate governance literature.

The proposed conceptual framework (Figure 1) is developed based on the hypotheses formulated in the literature review, illustrating the relationship between board independence, board characteristics, firm-specific financial determinants, and firm performance in the context of emerging economies and the highly regulated Food and Allied Industry.

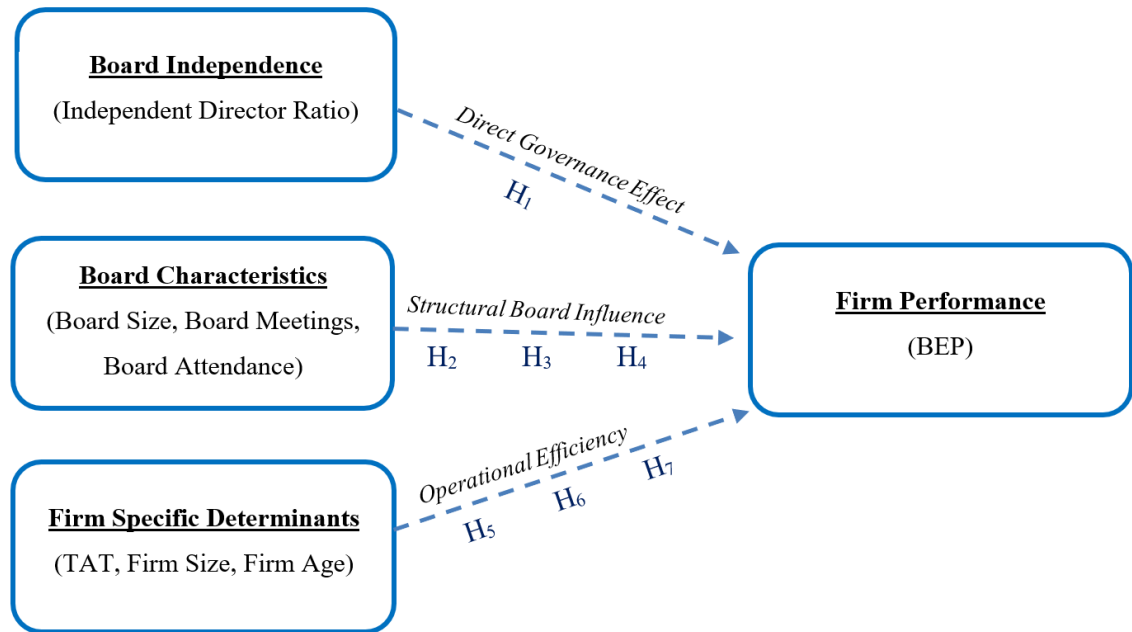


Figure 1: Conceptual Framework of Governance-Performance Relationship

Source: The author

Figure 1 illustrates the conceptual framework guiding this study. The model presents three core governance dimensions influencing firm performance, measured by BEP. H_1 reflects the direct effect of board independence—measured through the Independent Director Ratio—on firm performance. H_2 , H_3 , and H_4 represent the structural influence of board characteristics, specifically board size, board meeting frequency, and director attendance, respectively. H_5 through H_7 address firm-specific determinants, namely TAT, firm size, and firm age, and their expected operational efficiency effects on performance. This framework aligns with the theoretical foundations discussed earlier and provides a structured basis for empirical testing.

Grounded in Agency Theory and RDT, the framework conceptualizes board independence as a primary governance mechanism influencing firm performance. It also incorporates board characteristics (Board Size, Board Meetings, and Board Attendance) as governance structural elements, while firm-specific financial factors (TAT, Firm Size, and Firm Age) act as control variables that influence operational efficiency and financial outcomes. Additionally, it acknowledges the unique governance challenges in the Food and Allied Industry, where regulatory oversight and compliance pressures may amplify the role of independent directors in shaping firm performance.

This integrated framework not only reflects the theoretical underpinnings of Agency Theory and RDT but also provides a structured foundation for empirical testing. By accounting for governance mechanisms, firm-specific characteristics, and the unique challenges of a highly regulated industry, it enables a context-specific analysis of firm performance in an emerging market setting.

To ground this framework in real-world application, the next chapter explores the empirical setting of the study, highlighting its institutional features, market conditions, and governance challenges.

3 Empirical Context – The Food and Allied Industry in Bangladesh

3.1 Food and Allied Industry in Bangladesh

The food and allied industry is a critical component of Bangladesh's economy, contributing significantly to employment generation, economic growth, and food security (Rashid 2018, 35). It is widely recognized as one of Bangladesh's most strategically important sectors, given its role in supporting gross domestic product (GDP), large-scale employment, and national food security. According to the Ministry of Industries (2023), the sector accounts for approximately 1.5% of GDP and provides direct and indirect employment to over 2.5 million individuals, making it one of the country's largest industrial employers (Bangladesh Bureau of Statistics 2023).

The sector encompasses a wide range of sub-industries, including food processing, dairy, poultry, fisheries, edible oil refining, and packaged food manufacturing (Maniruzzaman & Hossain 2019, 99). Driven by urbanization, rising consumer demand, and export opportunities, the industry has maintained an average annual growth rate of 7.1% (World Bank, 2023), with projections indicating continued expansion in the coming years. Sub-sectors such as dairy, poultry, fisheries, grains milling, packaged foods, and beverages form the backbone of this diverse and evolving industry.

The food processing industry is one of the largest segments within this sector that has witnessed significant growth in recent years. Increasing urbanization, shifting consumer preferences, and rising disposable incomes have fueled demand for processed and packaged foods, leading to a rapid transformation of the industry (Bangladesh Investment Development Authority 2023). Government incentives and foreign direct investment (FDI) have also played a key role in the industry's expansion, with the food processing sector attracting USD 300 million in FDI over the past two years (BIDA 2023). Additionally, Bangladesh's expanding middle class and changing dietary habits have contributed to a surge in demand for ready-to-eat and convenience foods, which have grown to constitute 20% of the total food market (Ahmad & Shil 2024).

From a structural perspective, the food and allied industry in Bangladesh is composed of both large corporations, and small and medium-sized enterprises (SMEs). Major domestic companies such as PRAN-RFL Group and Square Food & Beverage Ltd. dominate the

market, while multinational firms such as Nestlé Bangladesh Ltd. and Unilever Bangladesh Ltd. have established a strong presence in various sub-sectors, particularly in dairy, confectionery, and beverage products (Export Promotion Bureau 2022). These companies have capitalized on technological advancements in food processing, automation, and supply chain management to enhance production efficiency and product innovation (Ahmad & Shil 2024). The SME segment, which represents a significant portion of the industry, has been instrumental in ensuring market competitiveness and accessibility, particularly in rural and semi-urban regions (Khalily et al. 2020).

Despite its rapid expansion, the food and allied industry faces several challenges. Supply chain inefficiencies, including inadequate infrastructure, post-harvest losses, and limited cold storage facilities, continue to hamper the industry's growth potential (Mainuddin & Kirby 2015, 635). Additionally, strict regulatory requirements regarding food safety, quality control, and compliance with international standards pose operational difficulties for many firms, particularly for SMEs with limited financial resources (Ahmad & Shil 2024). Competition from imported food products, especially in processed food and packaged segments further pressures local firms to enhance product quality and branding to remain competitive (BBS 2021).

In response to these challenges, the Bangladeshi government has prioritized the food processing sector as a key area for industrial development under its Vision 2041 economic roadmap, which aims to promote sustainable agricultural practices, improve food security, and encourage agro-based industrialization (Planning Commission 2022). Investment in technological infrastructure, logistics, and regulatory reforms is expected to play a crucial role in fostering long-term growth and competitiveness within the industry (World Bank 2023).

Overall, the food and allied industry in Bangladesh presents significant growth opportunities, driven by strong domestic demand, rising exports, and regulatory developments. However, to sustain its growth trajectory, firms must adapt to evolving consumer preferences, invest in innovation, and remain responsive to evolving regulatory standards. Building on this foundation, the next section explores the sector's current market conditions, offering insights into evolving consumer behavior, competitive trends, and external pressures shaping future competitiveness.

3.2 Market Condition

The food and allied industry in Bangladesh operates in a dynamic and evolving market environment, shaped by demographic shifts, economic growth, and changing consumer behavior. The industry has experienced steady expansion over the past decade, driven by increasing urbanization, rising disposable incomes, and evolving dietary preferences (Rashid 2018, 34). As of 2023, consumer spending on food accounts for nearly 60% of total household expenditures, reflecting the sector's central role in the country's economic landscape (Bangladesh Bureau of Statistics 2023).

A key characteristic of the market is the growing demand for processed, packaged, and convenience foods, particularly in urban areas where lifestyle changes have led to a shift away from traditional fresh food consumption (Jia et al. 2023, 5). The emergence of modern retail chains, supermarkets, and online grocery platforms has further accelerated this trend, offering consumers greater accessibility to branded food products and ready-to-eat meals (Ima et al. 2024, 367). As a result, processed food now constitutes approximately 20% of the total food market, a significant increase from previous decades (Jia et al. 2023, 5).

Bangladesh's food and beverage market is also characterized by a rapidly expanding middle class, with growing purchasing power and increasing demand for quality, safety, and variety in food products (Amanullah 2021, 43). This has led to a rise in premium food categories, including organic, fortified, and health-focused products, reflecting a broader global shift toward nutrition-conscious consumption (Rashid 2018, 36). The increasing influence of Western diets and international brands has contributed to the diversification of consumer choices, prompting local firms to innovate and expand their product portfolios to remain competitive (Barois et al. 2024).

Despite these positive trends, the industry faces several challenges that impact market dynamics. Supply chain inefficiencies, infrastructure limitations, and regulatory bottlenecks continue to hinder the smooth distribution of food products across the country (Khalily et al. 2020, 6). Additionally, SMEs which make up a significant portion of the industry are struggling to access financing and technological advancements needed to scale production and maintain quality standards (Barois et al. 2024). Competition from imported food products also remains a concern, particularly in the processed food

segment, where foreign brands often dominate market share due to stronger brand recognition and economies of scale (Jia et al. 2023, 7).

In response to these challenges, the Bangladeshi government has implemented various initiatives to support the food and allied sector, including tax incentives, infrastructure development, and investment in food safety standards (Ministry of Food Processing Industries, 2021). The country's growing integration into regional and global trade agreements has also opened up new opportunities for food exports, particularly in processed agricultural goods and halal-certified products (Export Promotion Bureau, 2022).

With continued investments in technology, supply chain efficiency, and regulatory reforms, the market conditions for the food and allied industry in Bangladesh are expected to remain favorable in the coming years. Given this evolving market landscape, it is now important to assess the industry's broader growth trajectory. The next section examines key indicators of sectoral growth, investment momentum, and supportive policy initiatives shaping future development.

3.3 Industry Growth

The food and allied industry in Bangladesh has experienced significant growth over the past decade, driven by rising consumer demand, urbanization, technological advancements, and government support (Bangladesh Investment Development Authority, 2023). As one of the fastest-growing sectors in the country, the industry has played a crucial role in boosting employment, enhancing food security, and increasing industrial output (World Bank 2023). The sector's expansion is reflected in its CAGR of approximately 8% over the past five years, with projections indicating a further 9.3% CAGR from 2024 to 2028 (World Bank 2023).

A key driver of industry growth has been the expanding middle-class consumer base, which has led to a greater demand for processed, packaged, and convenience foods (Barois et al. 2024). As disposable incomes rise, consumers are shifting from traditional fresh food consumption toward branded and ready-to-eat products, fueling increased investment in food processing and packaging industries (Bangladesh Bureau of Statistics 2023). Additionally, export opportunities have contributed to the industry's expansion, with Bangladeshi food products—including packaged snacks, frozen seafood, and halal-

certified items—gaining traction in regional and international markets (Export Promotion Bureau 2022).

The government of Bangladesh has actively supported the industry's growth by implementing policies that promote industrialization, foreign direct investment (FDI), and infrastructure development (Planning Commission 2022). Through initiatives such as the National Industrial Policy and the Vision 2041 Economic Roadmap, the government has prioritized the food processing sector, offering tax incentives, subsidies, and investment-friendly regulations to encourage domestic and foreign participation (Bangladesh Investment Development Authority 2023). Additionally, investments in agriculture modernization and supply chain efficiency have improved the industry's overall productivity, reducing post-harvest losses and ensuring a stable food supply (Ministry of Food Processing Industries 2021).

Technological advancements have also played a crucial role in shaping industry growth. Leading firms have invested in automation, digital transformation, and e-commerce platforms to enhance distribution efficiency and cater to evolving consumer preferences (Barois et al. 2024). The rise of online grocery shopping and food delivery services has created new market opportunities, encouraging food manufacturers to develop digitally integrated supply chains and innovative product offerings (Amanullah 2021, 41).

Despite its strong growth trajectory, the food and allied industry faces several challenges that could impact its long-term sustainability. Supply chain disruptions, regulatory compliance issues, and rising production costs remain key concerns for industry stakeholders (Hoque & Islam 2023, 235). Additionally, competition from imported food products and the need for enhanced food safety standards require firms to continuously adapt their operational strategies (Rashid 2018).

Looking ahead, the future of the food and allied industry in Bangladesh remains highly promising, with continued urbanization, increased consumer spending, and policy-driven industrial development expected to drive sustained growth. Firms that embrace technological innovation and expand into global markets will be well-positioned to capitalize on the sector's evolving landscape (World Bank 2023). In light of this momentum and the challenges it brings, the next section examines the role of key market players and their strategic contributions to shaping industry development.

3.4 Major Players

The food and allied industry in Bangladesh is composed of a mix of large domestic corporations, multinational companies, and SMEs, each playing a crucial role in shaping the sector's competitive landscape. The industry is highly concentrated, with a few dominant firms controlling a significant share of the market, while smaller enterprises contribute to market diversity and innovation (Export Promotion Bureau 2022).

Among the most influential domestic firms, PRAN-RFL Group and Square Food & Beverage Ltd. hold a leading market position, collectively capturing approximately 35% of the food processing sector's market share (Bangladesh Investment Development Authority, 2023). PRAN, a pioneer in Bangladesh's food industry, has established a strong presence in both local and international markets, with exports reaching over 145 countries worldwide (AMCL Group 2023). Square Food & Beverage Ltd., known for its strict quality control and diversified product line, has also emerged as a key player, particularly in the dairy, confectionery, and ready-to-eat food segments (Rahman & Uddin, 2020).

Multinational corporations such as Nestlé Bangladesh Ltd. and Unilever Bangladesh Ltd. have also established a strong foothold in the industry, leveraging their global expertise, brand reputation, and advanced manufacturing capabilities (Nestlé Bangladesh, 2023). Nestlé, a leader in dairy and infant nutrition, has been instrumental in introducing nutrient-enriched products tailored to Bangladeshi consumers, while Unilever dominates the tea, ice cream, and processed food segments (Unilever Bangladesh Ltd. 2023). These multinational firms have benefited from Bangladesh's growing middle-class consumer base, which increasingly seeks premium and international food products (Mainuddin & Kirby 2015, 637).

In the edible oil refining and sugar production segments, S. Alam Group has emerged as a major market player, with significant investments in refining operations. The company has expanded its production capacity to meet increasing domestic demand, contributing to the stabilization of edible oil prices and improving overall food supply chain efficiency (S. Alam Group 2024). Additionally, smaller enterprises and local manufacturers continue to play a vital role in the industry by catering to niche markets, traditional food products, and regional specialties, ensuring greater market accessibility and affordability for consumers across Bangladesh (Mainuddin & Kirby 2015, 636).

Despite their dominance, leading firms in the food and allied industry face intense competition and operational challenges. Rising production costs, compliance with evolving food safety regulations, and competition from imported brands have required companies to adopt strategic innovations in supply chain management, product diversification, and brand positioning (Rashid 2018, 42). Moreover, the increasing shift toward digital commerce and online grocery platforms has encouraged major players to invest in e-commerce distribution channels, reflecting a broader trend in consumer purchasing behavior and market accessibility (Mainuddin & Kirby 2015, 640).

Firms that improve operational efficiency and adapt to changing consumer demands are expected to remain at the forefront of Bangladesh's competitive food and allied industry. As these dominant players continue to shape the sector's trajectory, it becomes equally important to examine how evolving corporate governance structures influence firm behavior and long-term sustainability. The next section explores recent governance reforms and their implications for the strategic direction of the industry.

3.5 Corporate Governance Reforms and BSEC Guidelines

The governance environment for publicly listed firms in Bangladesh has undergone significant transformation in recent years, driven by efforts to align domestic standards with international best practices. For the Food and Allied Industry—an inherently sensitive sector due to its regulatory exposure to food safety, environmental compliance, and public health—the role of corporate boards has become increasingly pivotal. Effective governance is now recognized not only as a legal compliance issue but also as a competitive necessity for firms operating in this high-stakes industry (Barois et al. 2024).

The Bangladesh Securities and Exchange Commission (BSEC) has played a central role in shaping this governance landscape. Its first major intervention came in 2006, introducing mandatory governance guidelines for listed firms. These guidelines required the inclusion of independent directors, the formation of audit committees, and improved disclosures (BSEC, 2006). However, compliance remained uneven, particularly among family-controlled firms, where controlling shareholders often dominated decision-making (Claessens & Yurtoglu 2013, 22).

In response to persistent governance gaps, the BSEC issued a revised Corporate Governance Code in 2018, which significantly strengthened board structure mandates. The revised code required that at least 20% of the board consist of independent directors, imposed educational and experience criteria for board members, and introduced reporting requirements on director attendance, board meetings, and the role of audit and nomination committees (BSEC 2018). These reforms were designed to enhance transparency, reduce agency costs, and promote long-term accountability—especially in sectors with elevated regulatory exposure such as food manufacturing and processing (Barois et al. 2024).

Since 2022, BSEC has increasingly promoted digitized governance disclosures, encouraged environmental and social risk reporting, and begun informal reviews of ESG-related performance metrics, particularly in industries directly tied to consumer welfare and export quality (IPES-Food, 2024; Dhaka Tribune, 2024). While these measures have not yet resulted in a new governance code, they reflect a clear policy trend toward stricter oversight and broader accountability. These developments have placed the Food and Allied sector under greater scrutiny due to its public-facing nature, high regulatory exposure, and strategic relevance in national and international supply chains (García et al. 2020, 88). Independent directors in this context face the dual challenge of ensuring regulatory compliance while maintaining effective governance oversight—particularly in firms where informal power structures dominate board dynamics (Giannarakis et al. 2020, 1991).

Despite these reforms, governance practices in the industry remain inconsistent. Large-cap firms such as Unilever Consumer Care, Olympic Industries, and BATBC have adopted more institutionalized governance systems—featuring independent directors, functional audit committees, and regular board engagement. However, many mid-cap and smaller firms continue to treat compliance as a formality, with persistent issues such as irregular meetings, low board attendance, and passive independent directors (Jio et al. 2023, 5). These discrepancies highlight a key limitation in emerging market governance: formal compliance does not always translate into effective oversight or accountability (Barois et al. 2024).

The Food and Allied Industry's complexity—marked by fragmented supply chains, tight food safety regulations, and growing ESG expectations—makes it a compelling setting for examining the role of board independence and structural governance characteristics.

This study's focus on board independence, board size, meeting frequency, and director attendance, alongside firm-specific controls, is situated in the context of these evolving governance dynamics. Board appointments in such firms are often driven by family loyalty or informal networks, which can undermine the role and independence of board members (Rashid 2018). By anchoring the analysis in the post-2018 regulatory framework and recognizing the ongoing momentum for reform since 2022, this study captures a critical period in which governance mechanisms are increasingly expected to influence performance outcomes in one of Bangladesh's most regulated sectors.

With the institutional and industry context established, the following chapter outlines the methodological approach used to empirically examine the relationship between board independence and firm performance.

4 Methodology

4.1 Research Design and Approach

This study employs a quantitative, explanatory research design to examine the impact of board independence on firm performance in the Food and Allied Industry of Bangladesh. The choice of a quantitative approach is driven by the nature of the research problem, which requires empirical analysis of governance variables, firm performance indicators, and statistical relationships between them. Unlike qualitative research, which focuses on subjective insights and thematic interpretations, a quantitative methodology enables hypothesis-driven, statistical examination of firm-level governance practices (Bryman & Bell 2015; Saunders et al. 2019).

Corporate governance and firm performance are numerically measurable constructs, making a quantitative research design the most appropriate choice. Board independence, board size, meeting frequency, and firm-specific determinants such as asset turnover, firm size, and firm age are all quantifiable metrics that can be analyzed using statistical methods (Safiullah et al. 2022, 2). This study aims to assess whether board independence and board characteristics affect firm performance. A statistical approach using financial data and econometric modeling provides a more robust and generalizable conclusion compared to qualitative inquiry (Abdullah et al. 2024, 21).

Furthermore, this study adopts a deductive reasoning approach, whereby hypotheses—formulated from theoretical perspectives such as Agency Theory (Jensen & Meckling 1976, 308) and RDT (Hillman & Dalziel 2003, 383)—are tested using firm-level data. This allows for hypothesis validation and theoretical refinement based on empirical evidence. As Ngo et al. 2023, assert, quantitative methods are particularly useful when analyzing how governance structures perform under varying market conditions, especially in sectors prone to regulatory scrutiny and operational complexity.

The quantitative approach ensures objectivity, replicability, and external validity—key pillars in rigorous academic research. It enables the use of panel data regression models to evaluate firm-level governance impacts over time. These models allow for controlling both cross-sectional and longitudinal variation, reducing omitted variable bias and accounting for unobserved heterogeneity (Wintoki et al. 2012, 594).

By adopting a quantitative, panel-data-based research design, this study ensures statistical rigor, empirical validity, and methodological robustness. The integration of theoretical foundations, panel regression models, and firm-size normalization techniques provides a structured and comprehensive framework for analyzing the effectiveness of board independence in emerging markets. These methodological choices align with best practices in corporate governance research, reinforcing the study's contribution to understanding governance mechanisms in Bangladesh's corporate sector (Amanullah 2021, 42). Given that the study includes firms of varying sizes, it is essential to normalize firm performance indicators to ensure fair comparisons. BEP is normalized by adjusting for total assets, ensuring that financial performance differences are not driven by firm size disparities (Hoque & Islam 2023, 237).

Recent literature confirms the appropriateness of this methodology in similar contexts. For instance, Kalash (2021) underscore that statistical models in corporate governance research are crucial in identifying how firm-specific board attributes shape financial outcomes in emerging markets. Likewise, Enilolobo et al. (2019) applied panel regression techniques to test the moderating effect of board independence on firm-level performance, validating its utility across various institutional environments.

Given these methodological strengths, this study's quantitative research design is well-aligned with its goal of uncovering measurable relationships between board independence and firm performance. By enabling robust statistical analysis, this approach contributes to the ongoing academic and policy discussions on governance effectiveness in emerging economies (Ngo et al. 2023). The following section outlines the data sources and sampling procedures employed to operationalize this research design.

4.2 Data Collection and Sample Selection

A longitudinal panel data design is employed to assess the impact of board independence on firm performance over time. The decision to use panel data, rather than a cross-sectional approach, is based on the fact that corporate governance structures evolve due to regulatory changes, ownership dynamics, and macroeconomic factors. In implementing this approach, the study utilizes panel data regression models to analyze secondary financial data collected over multiple years. Panel data analysis is effective in controlling for unobserved heterogeneity and capturing the dynamics of corporate governance practices across different firms and time periods (Wooldridge 2010, 247-

249). A single-year snapshot would not capture these governance changes, making a multi-year approach necessary to track board effectiveness in different time periods. Panel data models allow for greater statistical control, as firm-specific variations that could influence financial performance are accounted for, reducing potential biases (Baltagi 2008, 13).

This study relies on secondary data sources to examine the relationship between board independence and firm performance in Bangladesh's Food and Allied Industry. The data is collected from publicly available financial reports, stock exchange disclosures, and corporate governance statements published by the Dhaka Stock Exchange (DSE), Chittagong Stock Exchange (CSE), and BSEC. The decision to use secondary data is based on its credibility, objectivity, and availability for longitudinal analysis (Hoque & Islam 2023, 236). Financial reports issued by publicly listed companies are externally audited, ensuring that the data used in this study is reliable, verifiable, and free from self-reporting biases (Kirca et al. 2011, 55). The reliance on officially reported financial and governance data enhances the validity and accuracy of the study's findings, as corporate governance disclosures are regulated under BSEC's corporate governance codes (BSEC, 2018), reinforcing the objectivity and validity of the analysis.

The study period is set from 2017 to 2022, covering a six-year timeframe that is strategically selected to align with Bangladesh's major corporate governance reforms. In particular, the 2018 revision of the BSEC's corporate governance code introduced stricter requirements for board independence, compelling publicly listed firms to increase the proportion of independent directors. By including data from both before and after this regulatory shift, the study is able to assess short- to medium-term impacts of these reforms on firm performance (Kalash 2021, 5).

Although the effects of governance changes may continue evolving beyond this window, several empirical studies suggest that structural board reforms tend to affect firm outcomes within three to five years, particularly when enforcement is formalized (Hoque & Islam 2023, 235). Moreover, post-2017, financial disclosures became more standardized in Bangladesh, enhancing the consistency and comparability of governance-related data (Amanullah 2021, 42).

A six-year panel also reduces the likelihood of results being driven by one-off firm events or economic anomalies, allowing for meaningful trend analysis while maintaining a

balanced panel structure. Thus, while longer time frames offer broader context, the selected period is methodologically sufficient to detect performance patterns resulting from regulatory changes, especially in the context of emerging market corporate governance (Ngo et al. 2023; Wintoki et al. 2012, 589).

The study focuses exclusively on the Food and Allied Industry of Bangladesh, analyzing all 21 publicly listed firms (see Appendix 1) in this sector. However, although 21 firms were initially included, two companies—Meghna Condensed Milk Industries and Meghna Pet Industries—were excluded from the regression analysis due to missing governance data such as board size and independent director disclosures. The final sample includes 19 firms. Among these, BD Thai Food & Beverage and Taufika Foods & Lovello Ice Cream were listed after 2017 and thus only contribute data from their listing years onward, resulting in an unbalanced panel structure.

The final dataset comprises 112 firm-year observations between 2017 and 2022. Descriptive statistics for the primary performance variable, BEP, are based on up to 121 observations, depending on data availability across variables. Although the study originally aimed for a census-based approach, these data constraints required the exclusion of a small number of firms.

Nonetheless, the final dataset still represents a near-complete coverage of the Food and Allied Industry's listed population, ensuring that findings remain broadly representative of the sector's governance dynamics (Saunders et al. 2019). By adopting a structured data collection process that incorporates audited financial reports, complete governance disclosures, and firm-size normalization techniques, this study ensures that its findings are statistically valid, empirically robust, and free from significant selection biases.

These methodological choices align with best practices in corporate governance research, reinforcing the study's contribution to understanding board independence in emerging market economies (Kumar & Zattoni 2014, 365). The following section explains how the study's variables are defined, measured, and prepared for econometric modeling.

4.3 Variables and Measurement

This study investigates the relationship between board independence and firm performance, specifically within the Food and Allied Industry of Bangladesh. To ensure methodological rigor and consistency with previous governance research, all variables

used in this study are selected based on established corporate governance and firm performance literature. The measures for these variables follow methodologies commonly applied in similar studies, ensuring comparability with prior research (Safiullah et al. 2022, 7; Sarker & Hossain 2023, 878). This section explains the selection, definition, and measurement of each variable and provides justifications based on empirical and theoretical foundations.

4.3.1 Dependent Variable

Firm performance is the key dependent variable in this study, measured using Basic Earning Power (BEP). **BEP** is defined as earnings before interest and taxes (EBIT) divided by total assets, offering a direct measure of a firm's ability to generate operating profits from its asset base (Amanullah 2021, 41). Unlike ROA or ROE, BEP is independent of capital structure decisions, making it a more neutral and reliable indicator of operational efficiency (Hoque & Islam 2023, 237). Since BEP is not influenced by variations in financial leverage, tax policies, or dividend distributions, it allows for a clearer assessment of how corporate governance practices impact firm profitability without distortions arising from financial structure variations (Amanullah 2021, 42).

A key methodological consideration in this study is the presence of larger firms within the sample, which may introduce distortions in financial performance measurements. Given that this study includes firms of varying sizes, BEP is normalized to prevent firm size disparities from distorting the results. Larger firms generally benefit from economies of scale, diversified revenue streams, and greater resource availability, leading to higher absolute earnings values even if governance effectiveness is weak (Wooldridge, 2010). If BEP is not adjusted for size, the results could be biased toward larger firms, falsely attributing superior performance to board governance rather than firm size advantages (Gujarati & Porter 2020, 294-295).

To address this issue, BEP is log-transformed and standardized, which ensures that financial performance is evaluated on a relative rather than absolute scale, improving comparability across firms of different sizes (Baltagi 2008). This adjustment accounts for total assets and provides a standardized lens to evaluate operational efficiency across firms. The use of panel data regression techniques in STATA further enhances result reliability by controlling for firm-specific heterogeneity, ensuring that the governance-performance relationship is accurately measured (Wooldridge 2010).

By using BEP as the dependent variable and implementing size normalization techniques, this study provides a robust, unbiased assessment of how board independence influences firm profitability. The next section discusses the independent variables, including board independence, board size, meeting frequency, and board attendance rates.

4.3.2 Independent Variable

The primary independent variable in this study is **Board Independence**, measured as the **Independent Director Ratio**, representing the proportion of independent directors on the board. This standardized measure allows for consistent assessment across firms, ensuring that governance effectiveness is evaluated relative to board size rather than absolute numbers (Bhagat & Bolton 2019, 163). Recent studies have reinforced the significance of board independence. For instance, Safiullah et al. (2022) found a positive association between board independence and firm performance during negative demand shocks, highlighting its role in enhancing firm resilience. Similarly, another study demonstrated that firms with higher proportions of independent directors achieved superior ROA values, underscoring the importance of independent oversight in enhancing shareholder value and mitigating agency conflicts (Papangkorn et al. 2020, 1098).

Beyond board independence, this study incorporates additional governance variables that influence firm performance. **Board size**, measured as the total number of directors, plays a crucial role in governance efficiency. While larger boards may offer diverse expertise and better strategic oversight, they can also suffer from coordination inefficiencies and slower decision-making processes (Imam et al. 2024, 94). Recent evidence remains mixed. Zraiq & Fadzil (2018), found a positive relationship between board size and ROA in Jordanian industrial firms, whereas earlier research such as reported a negative correlation, suggesting the relationship may depend on firm or market-specific factors (Yermack 1996, 206).

Board meeting frequency, measured as the total number of board meetings held annually, serves as a proxy for board engagement and oversight intensity. Frequent meetings may indicate stronger governance and more proactive decision-making. Rashid (2018) reported a significant positive relationship between meeting frequency and firm performance in Bangladesh's corporate sector. However, another study found an inverted U-shaped relationship between board meeting frequency and performance, indicating that

excessive meetings may result in diminishing returns, depending on firm-specific context (Antwi et al. 2021, 107)

Board attendance rate, measured as the average attendance of directors at board meetings, reflects the level of director commitment and involvement. Higher attendance is associated with stronger governance and more effective decision-making (Adams & Ferreira 2009, 302). Ima et al. (2024) argue that consistent attendance helps reduce information asymmetry, improves board oversight, and leads to better strategic outcomes. Conversely, low attendance may indicate disengagement and weak monitoring, potentially undermining firm performance (Ooko 2024, 56).

Although Board Attendance was initially included as one of the independent variables in this study, multicollinearity diagnostics conducted during the regression analysis phase revealed a high correlation between this variable and other governance indicators. To maintain model integrity and prevent estimation bias, the variable was excluded from the final regression specification. Consequently, H₄ was not empirically tested, though its theoretical relevance is retained within the governance framework.

By including board independence, board size, board meeting frequency, and board attendance rate, this study captures both structural and functional dimensions of board governance, ensuring a comprehensive assessment of how governance mechanisms influence financial performance. The next section discusses control variables that account for firm-specific factors, providing a more precise measurement of the governance-performance relationship.

4.3.3 Control Variables

To ensure that the relationship between board independence and firm performance is accurately measured, this study includes firm-specific control variables that account for external influences on financial outcomes. Control variables are essential in corporate governance research as they help isolate the true effect of board characteristics on firm performance, preventing omitted variable bias and ensuring that governance-related findings are not confounded by firm-level characteristics (Safiullah et al. 2022, 4-5). Without proper controls, the observed effects of board independence on financial performance may be misattributed to firm-specific factors rather than governance mechanisms (Bhagat & Bolton 2019, 163).

This study includes firm size, firm age, and TAT as control variables, all of which are widely used in governance-performance research. These variables capture essential firm characteristics that influence profitability, risk exposure, and operational efficiency, ensuring that the study accurately measures the impact of board governance structures on financial performance.

Firm size is an important determinant of financial performance, as larger firms often have greater access to capital, diversified revenue streams, and enhanced economies of scale, all of which can positively impact profitability (Yermack 1996, 192). However, larger firms may also experience bureaucratic inefficiencies, higher agency conflicts, and slower decision-making processes, which could weaken the benefits of board oversight (Adams & Ferreira 2009, 302-303). Since larger firms naturally generate higher absolute earnings due to their scale, failing to control for firm size could lead to biased estimates, where financial performance improvements are wrongly attributed to governance quality instead of firm scale advantages (Mardnly et al. 2018, 595). To adjust for this effect, firm size is measured as the natural logarithm of total assets, a widely accepted transformation that ensures comparability across firms of different scales while minimizing the influence of extreme values (Gujarati & Porter 2020, 166-170).

Firm age is another key control variable, as older firms typically benefit from greater industry experience, established market reputation, and long-term strategic stability (Bhattacharjee & Rahman, 2013). Older firms are often expected to have more structured governance frameworks, lower risk exposure, and better-developed financial management systems, which can enhance firm's performance (Rashid 2018, 44). However, older firms may also exhibit organizational inertia, resistance to change, and slower adaptability to new market trends, which can negatively impact profitability and strategic flexibility (Mardnly et al. 2018, 596). Firm age is measured as the number of years since the firm's incorporation, capturing its longevity and stability within the industry. Controlling for firm age ensures that the observed effects of board independence are not confounded by firm maturity advantages but instead reflect governance-driven performance improvements.

Total asset turnover (TAT) is included as a measure of operational efficiency and asset utilization, which is a crucial determinant of firm profitability. TAT is calculated as net sales divided by total assets, capturing how effectively a firm utilizes its asset base to

generate revenue (Kirca et al. 2011, 59). A higher TAT ratio suggests that a firm is efficient in managing its assets to maximize sales, which can contribute to higher financial performance regardless of governance mechanisms (Alber & Hameed 2025, 172). However, firms with exceptionally high TAT may also be engaging in high-risk operational strategies, aggressive inventory turnover policies, or reduced long-term capital investment, which can introduce financial volatility (Bhagat & Bolton 2019, 167). Including TAT as a control variable ensures that profitability improvements are not solely attributed to asset utilization efficiency but instead reflect the effectiveness of board governance structures.

Table 1 provides a methodological justification for the selection of these variables, ensuring consistency with previous corporate governance research and panel data analysis techniques.

Table 1: Summary of variables, formulas, and justifications

Variable	Measurement Formula	Justification	Expected Effect on BEP	Key Citations
Basic Earning Power (BEP)	EBIT / Total Assets	Measures operational profitability independent of financing decisions. Common in governance research as a neutral firm performance indicator.	Positive (Good governance should enhance BEP)	(Amanullah 2021, 41); (Imam et al. 2024, 94)
Independent Director Ratio (Board Independence)	No. of Independent Directors / Total Board Size	Agency Theory suggests a higher proportion of independent directors improves oversight and accountability, reducing managerial opportunism.	Positive	(Jensen & Meckling 1976, 318) (Bhagat & Bolton 2019, 163)
Board Size	Total number of directors	Larger boards provide more expertise but may lead to inefficiencies. Non-linear impact on performance.	Uncertain (Positive up to a point, but too large may reduce efficiency)	(Amanullah 2021, 43); (Adams & Ferreira 2009, 302)

Board Meeting Frequency	Number of board meetings per year	More meetings can improve monitoring, but excessive meetings may indicate inefficiencies or firm distress.	Positive or Neutral	(Vafeas 1999, 113); (Adams & Ferreira 2009, 304)
Board Attendance Rate	Total Meetings Attended / Total Board Meetings	High attendance indicates stronger board engagement, which is linked to better governance and firm performance.	Positive (Not Tested)	(Bhagat & Bolton 2019, 163-164); (Alodat et al. 2022, 872)
Firm Size	ln(Total Assets)	Larger firms have better access to financial resources, economies of scale, and stability but may also suffer from inefficiencies.	Positive or Neutral	(Yermack 1996, 192); (Imam et al. 2024, 94)
Firm Age	Number of years since incorporation	Older firms benefit from market experience, stability, and investor trust but may also face inertia and reduced adaptability.	Positive or Neutral	Bhattacharjee & Rahman (2013); (Alodat et al. 2022, 873)
Total Asset Turnover (TAT)	Net Sales / Total Assets	Measures asset utilization efficiency. High TAT indicates strong operational performance, but excessively high TAT may signal risky operations.	Positive	Kirca et al. (2010), (Alber & Hameed 2025, 170)

By incorporating firm size, firm age, and TAT, this study controls for key firm-level factors that could independently influence BEP, ensuring that the relationship between board independence and firm performance is accurately measured. The inclusion of these control variables strengthens the empirical model by minimizing omitted variable bias, enhancing the validity and reliability of the governance-performance findings (Baltagi, 2008). With all variables defined and measurement choices established, the next section outlines the econometric models and estimation techniques used to analyze the governance-performance relationship.

4.4 Econometric Model and Estimation Techniques

4.4.1 Panel Data Approach and Model Specification

This section outlines the econometric methodology used to analyze the impact of board independence on firm performance in Bangladesh's Food and Allied Industry. The study employs panel data regression models to capture both cross-sectional and time-series variations. Panel data models provide a methodological advantage over cross-sectional regressions by allowing for the control of firm-specific unobserved heterogeneity, which could otherwise bias the results (Baltagi 2008, 6).

Panel regression models are used to estimate the impact of board independence, board size, board meetings, and director attendance on firm performance, with BEP serving as the dependent variable. Firm-specific control variables—firm size, firm age, and TAT—are included to account for heterogeneity across firms. To ensure robustness, the study applies both Fixed Effects (FE) and Random Effects (RE) models, with the Hausman test employed to determine the appropriate specification (Hausman 1978, 1256-1266). Diagnostic tests for multicollinearity, heteroskedasticity, and autocorrelation are conducted to validate the reliability of the model (Wooldridge 2010, 95–98, 263–270, 386–388). All statistical analyses, including variable transformations and regression estimations, are performed using STATA.

The dependent variable, Basic Earning Power ($BEP_{it_Normalized}$), is regressed on the Independent Director Ratio, board characteristics (board size, board meetings), and firm-specific control variables (firm size, firm age, TAT). The inclusion of these firm-specific controls ensures that the estimated impact of board independence is not confounded by other financial and structural factors influencing performance.

The general econometric specification of the model is as follows:

$$BEP_{it_Normalized} = \beta_0 + \beta_1 IDR_{it} + \beta_2 BS_{it} + \beta_3 BM_{it} + \beta_4 BA_{it} + \beta_5 TAT_{it} + \beta_6 FirmSize_{it} + \beta_7 FirmAge_{it} + \alpha_{it} + \epsilon_{it}$$

where:

$BEP_{it_Normalized}$ = Log-transformed Basic Earning Power for firm i at time t .

IDR_{it} = Independent Director Ratio (proportion of independent directors to board size).

BS_{it} = Board Size (total number of directors).

BM_{it} = Board Meeting Frequency (number of board meetings per year).

BA_{it} = Board Attendance Rate (average attendance of directors at board meetings).

FS_{it} = Firm Size (log of total assets).

FA_{it} = Firm Age (years since incorporation).

TAT_{it} = Total Asset Turnover (net sales divided by total assets).

β_0 = Intercept.

α_i = Firm-specific fixed effects

ϵ_{it} = Error term.

The model assumes a linear relationship between board characteristics and firm performance, controlling for firm-specific heterogeneity and potential omitted variable bias (Baltagi 2008, 13). Since panel data allows for the observation of multiple firms over time, the model captures both cross-sectional variations (differences between firms) and time-series variations (changes within firms over time) (Wooldridge 2010, 247-249).

The study employs panel regression techniques in STATA to examine the impact of board independence on BEP, considering both FE and RE models. The Hausman test determines the appropriate model specification, while diagnostic tests for multicollinearity, heteroskedasticity, and autocorrelation validate model assumptions (Hausman 1978, 1256–1265). This approach aligns with prior research on governance-performance relationships using panel data regression (Amanullah 2021, 46; Rashid 2018, 43).

The next section discusses the justification for using panel data regression instead of cross-sectional or time-series analysis, highlighting its advantages in governance-performance research.

4.4.2 Justification for Panel Data Regression

The use of panel data is particularly advantageous in corporate governance research because it enables the control of unobservable firm-specific characteristics that remain constant over time, which would otherwise bias the results in cross-sectional models (Wooldridge 2010, 248). Cross-sectional regression models, which analyze firm performance at a single point in time, fail to account for the dynamic nature of governance structures and firm-specific heterogeneity (Hsiao 2003, 3-4). Since governance mechanisms such as board independence, board meetings, and board attendance evolve in response to regulatory changes, firm growth, and market conditions, a single-period snapshot does not adequately capture these variations (Papangkorn et al. 2020, 1096). In contrast, panel regression models allow for the estimation of governance-performance relationships while controlling for omitted variables that may differ across firms but remain stable over time. The Hausman test was employed to determine whether fixed or random effects should be used (Hausman 1978).

Another advantage of panel data over cross-sectional analysis is its ability to control for time-invariant characteristics that could bias results in governance studies. Certain firm-specific attributes, such as organizational culture, managerial style, and industry positioning, may systematically influence performance but are difficult to quantify in traditional regression models (Wooldridge, 2010). By using FE or RE models, panel data regression techniques help to account for these unobserved heterogeneities, ensuring that the estimated effects of board independence and other governance characteristics on BEP are not confounded by firm-specific factors (Baltagi 2008, 13).

Additionally, panel data models are well-suited for mitigating endogeneity concerns, a common issue in corporate governance research. Endogeneity arises when explanatory variables are correlated with the error term, leading to biased coefficient estimates (Wintoki et al. 2012, 594). In governance-performance studies, reverse causality is a major concern, as high-performing firms may naturally attract stronger governance structures rather than governance necessarily driving firm performance (Bhagat & Bolton 2019, 167-168). The use of panel regression allows for the inclusion of lagged variables and firm-specific controls, reducing the risk of simultaneity bias and improving the causal interpretation of governance effects (Alodat et al. 2022, 881).

The study applies both Fixed Effects (FE) and Random Effects (RE) models to estimate the relationship between board independence and firm performance. The **FE model** assumes that firm-specific characteristics, which do not vary over time, are correlated with the explanatory variables, making it suitable for analyzing within-firm variations (Hausman 1978, 1257). The **RE model**, on the other hand, assumes that these unobserved characteristics are uncorrelated with the explanatory variables, allowing for the inclusion of both within-firm and between-firm variations (Baltagi 2008, 12).

Since the choice between FE and RE models depends on the correlation structure of the data, the Hausman test is conducted to determine the appropriate specification (Hausman 1978, 1257, 1260–1265). If the test indicates that firm-specific effects are correlated with governance variables, the FE model is preferred; otherwise, the RE model is retained for efficiency (Wooldridge 2010, 290-291).

By adopting panel data regression techniques in STATA, this study ensures that governance-performance relationships are estimated with greater precision and reduced bias. The next section discusses the selection process between FE and RE models, highlighting the role of the Hausman test in determining the appropriate econometric specification.

4.4.3 Fixed Effects (FE) Model

The Fixed Effects (FE) model assumes that unobserved firm-specific characteristics, such as corporate culture, managerial style, and ownership concentration, do not change over time but are correlated with independent variables. If this correlation is ignored, it could lead to omitted variable bias, distorting the estimated impact of board governance mechanisms on firm performance (Wooldridge 2010, 248–249, 290–291). The FE model eliminates this bias by allowing each firm to have its own intercept, effectively removing time-invariant characteristics from the estimation (Baltagi 2008, 12-13).

Given the results of diagnostic tests (presented in Section 5.5), which confirmed the presence of heteroskedasticity and within-firm autocorrelation, the FE model was estimated using clustered standard errors at the firm level. This correction enhances the statistical robustness of the model by ensuring that standard errors remain valid even when error terms are correlated across time within the same firm and exhibit non-constant variance.

By applying the FE model, the study ensures that variations in firm performance (BEP) are explained by differences in governance structures over time, rather than by static firm-specific characteristics (Amanullah 2021, 42-43). This makes the FE model particularly useful for analyzing corporate governance dynamics, as governance structures such as board independence and board meetings may evolve due to regulatory changes or firm-level strategic adjustments (Bhagat & Bolton 2019, 163-164).

The mathematical representation of the FE model is given by:

$$BEP_{it_Normalized} = \alpha_i + \beta_1 IDR_{it} + \beta_2 BS_{it} + \beta_3 BM_{it} + \beta_4 BA_{it} + \beta_5 TAT_{it} + \beta_6 FirmSize_{it} + \beta_7 FirmAge_{it} + \epsilon_{it}$$

where:

α_i represents the firm-specific fixed effect, which captures time-invariant firm characteristics.

ϵ_{it} is the idiosyncratic error term that varies across firms and time.

The other variables are as defined in the model specification section.

One limitation of the FE model is that it does not estimate the effects of time-invariant variables, such as industry-specific governance regulations or long-term ownership structures, since it removes all firm-specific effects that do not change over time (Baltagi, 2008).

4.4.4 Random Effects (RE) Model

The Random Effects (RE) model, unlike the FE model, assumes that firm-specific characteristics are not correlated with independent variables and instead treats them as part of the error term (Baltagi 2008, 11). This assumption allows for the estimation of both within-firm and between-firm variations, making the RE model more efficient when firm-specific effects are truly randomly distributed and uncorrelated with governance structures (Hausman 1978, 1260-1263).

The mathematical representation of the Random Effects model is:

$$BEP_{it_Normalized} = \beta_0 + \beta_1 IDR_{it} + \beta_2 BS_{it} + \dots + v_i + \epsilon_{it}$$

where:

v_i represents the firm-specific random effect, assumed to be uncorrelated with independent variables.

ϵ_{it} is the idiosyncratic error term.

The other variables are as defined in the model specification section.

The RE model in this study is estimated using Generalized Least Squares (GLS), which is particularly appropriate for unbalanced panel data structures and efficient under the assumption that individual effects are uncorrelated with the regressors. GLS corrects for heteroskedasticity and serial correlation in the error term by modeling the variance structure across firms and over time. This method ensures consistent and efficient estimates, making it a suitable complement to the FE model in the presence of panel-specific variation. Although no separate diagnostic tests were required to select GLS, its use is theoretically appropriate for RE models, particularly in the presence of unbalanced panel data and suspected heteroskedasticity and autocorrelation, as discussed more broadly in Section 5.5.

The RE model is advantageous because it retains time-invariant firm characteristics, such as ownership structures or regulatory differences across firms, making it more appropriate when such characteristics influence governance-performance relationships (Wooldridge 2010, 284–286). However, the RE model produces biased estimates if firm-specific effects are correlated with board independence or other governance variables. In such cases, the Hausman test is applied to determine whether the FE model should be used instead (Hausman 1978, 1256–1265).

4.4.5 Hausman Specification Test

The Hausman test is conducted to determine whether the FE or RE model provides more reliable estimates. The test evaluates whether unobserved firm-specific factors are correlated with explanatory variables.

Null Hypothesis (H_0): The RE model is preferred (firm-specific effects are uncorrelated with independent variables).

Alternative Hypothesis (H_1): The FE model is preferred (firm-specific effects are correlated with independent variables).

The Hausman test follows the formula:

$$H = (\beta^{RE} - \beta^{FE})' [\text{Var}(\beta^{RE}) - \text{Var}(\beta^{FE})]^{-1} (\beta^{RE} - \beta^{FE})$$

here β^{RE} and β^{FE} are the estimated coefficients from the Random Effects and Fixed Effects models, respectively. If the test statistic is significant (p-value < 0.05), the null hypothesis is rejected, indicating that firm-specific effects are correlated with governance variables. In this case, the FE model is preferred, as it provides consistent estimates by controlling for unobserved heterogeneity (Hausman 1978, 1256–1265). Conversely, if the test statistic is not significant (p-value > 0.05), the null hypothesis is not rejected, suggesting that firm-specific effects are uncorrelated with the explanatory variables, in which case the RE model is used (Baltagi 2008, 13-14).

To conduct the Hausman test in STATA, the following command is used:

Hausman fe re

The next section presents diagnostic tests to validate the assumptions of the selected panel regression model, including tests for multicollinearity, heteroskedasticity, and autocorrelation.

4.4.6 Diagnostic Tests for Model Validity

Ensuring the validity of the econometric model is crucial in panel data regression, as violations of standard assumptions can lead to biased, inconsistent, or inefficient estimates. Before interpreting the results of the FE or RE models, diagnostic tests will be conducted to examine multicollinearity, heteroskedasticity, and autocorrelation, all of which can distort regression outcomes if not properly addressed (Wooldridge 2010, 95–98, 263–270, 386–388).

One of the fundamental assumptions of regression analysis is that independent variables should not be highly correlated, a condition known as multicollinearity. If independent variables are strongly correlated, the estimated coefficients become unreliable, leading to inflated standard errors (SE) and reduced statistical significance (Gujarati & Porter 2020, 349–351). To detect multicollinearity, this study employs the Variance Inflation Factor (VIF) test, which quantifies how much the variance of an estimated regression coefficient is increased due to collinearity. A VIF value above 10 is considered indicative of high multicollinearity, necessitating corrective measures such as removing highly correlated

variables, transforming variables, or constructing composite indices (Gujarati & Porter, 2020, pp. 352–354).

Another key assumption in panel regression models is homoscedasticity, meaning that the variance of the error terms remains constant across observations. When this assumption is violated, leading to heteroskedasticity, the SE of the regression coefficients become biased, making hypothesis tests unreliable (Wooldridge, 2010). To detect heteroskedasticity, this study applies the Breusch-Pagan test, which examines whether the variance of residuals changes systematically across firms (Breusch & Pagan 1979, 1288–1290). If heteroskedasticity is detected, robust standard errors (heteroskedasticity-consistent standard errors) will be applied to correct for the bias, ensuring that the estimated coefficients remain valid (White 1980, 817–825).

In addition to heteroskedasticity, autocorrelation is a common concern in panel data analysis, particularly when error terms are correlated across time. Serial correlation in the residuals can lead to inefficient estimates and biased SE, distorting statistical inferences (Baltagi 2008, 135). To detect autocorrelation, this study applies the Durbin-Watson test and Wooldridge test for serial correlation, which assess whether the error terms in one time period are correlated with those in previous periods (Drukker 2003, 169-174; Gujarati & Porter 2020, pp. 446–448). If autocorrelation is detected, appropriate adjustments such as clustered SE or first-differencing techniques will be applied to correct for serial dependence, ensuring that the results remain robust (Wooldridge 2010, 387).

By systematically conducting these diagnostic tests, this study ensures that the chosen panel regression model satisfies key econometric assumptions, improving the reliability and validity of the estimated effects of board governance on firm performance. The next section discusses the data processing steps and model estimation techniques, detailing how these tests will be conducted to ensure empirical robustness.

4.5 Data Processing and Implementation

This section outlines the data processing, statistical analysis, and model estimation procedures used to examine the impact of board independence on firm performance. Before conducting panel regression analysis, ensuring that the dataset is accurate, complete, and properly structured is essential. Any data inconsistencies, missing values, or extreme outliers must be addressed to prevent biased results. Additionally, the panel

data structure must be correctly defined to allow for the appropriate estimation of FE and RE models (Baltagi 2008).

Descriptive and correlation analyses were conducted to prepare the dataset and check for collinearity. The study then applied panel regression techniques to examine the governance-performance relationship, using the Hausman test to determine whether the FE or RE model is more appropriate (Hausman 1978). If the test indicates that firm-specific characteristics are correlated with independent variables, the FE model will be selected; otherwise, the RE model will be used for efficiency.

Diagnostic tests described in the previous section were applied to validate the regression assumptions. To further confirm the stability of findings, robustness tests will be performed, including alternative model specifications and the introduction of lagged independent variables to address potential endogeneity concerns. Additionally, ROA and ROE will be used in supplementary analyses to assess whether findings are consistent across different measures of firm performance (Bhagat & Bolton, 2019, 164-165).

The next section details the data processing and cleaning procedures, outlining how missing values, outliers, and variable transformations will be handled to prepare the dataset for empirical analysis.

4.5.1 Data Processing and Cleaning

Ensuring data accuracy, completeness, and consistency is a critical step before conducting panel regression analysis. In corporate governance research, missing governance metrics, firm size heterogeneity, and unbalanced panel structures are common challenges that must be addressed to ensure statistical inferences remain valid (Baltagi 2008). This section outlines the data processing and cleaning procedures, including handling missing values, addressing unbalanced panel structure, computing missing governance variables, normalizing financial performance measures, detecting and treating outliers, and structuring the dataset for panel regression analysis.

An inherent feature of the dataset is its unbalanced panel structure, as not all firms have observations for each year between 2017 and 2022. This is primarily due to certain firms being listed after 2017, limiting the availability of historical financial and governance data. For instance, BD Thai Food & Beverage (listed in 2020) and Taufika Foods & Lovello Ice Cream (listed in 2019) only contribute data from their respective listing years

onward. Conversely, firms lacking essential governance data entirely, such as Meghna Condensed Milk Industries and Meghna Pet Industries, were excluded from the sample. Following data cleaning and the removal of firm-years with missing values, the final dataset comprises 19 firms and 112 firm-year observations.

Since these missing values are a result of structural limitations rather than reporting errors, they cannot be imputed. Instead, the study follows the standard econometric approach of retaining firms with later entry, treating the dataset as an unbalanced panel, which is widely accepted in corporate governance studies (Wooldridge 2010).

To define the dataset as panel data in STATA, the following command is used:

```
xtset firm_id year
```

where *firm_id* represents the unique firm identifier, and *year* represents the time period (2017–2022). This ensures that STATA recognizes the dataset as panel data, allowing for appropriate estimation of FE and RE regression models (Baltagi 2008).

In corporate governance research, missing data in variables such as Board Size, Board Meetings, and Independent Directors is common due to inconsistent disclosures in annual reports. However, in this study, no imputation was applied. Firm-year observations with missing governance variables were excluded entirely from regression analysis. This approach ensures that key metrics such as the Independent Director Ratio are based solely on actual reported data, avoiding distortions that can result from using estimated inputs in ratio construction.

A total of 9 firm-year observations were excluded due to incomplete governance data, resulting in a final regression panel of 19 firms and 112 firm-year observations. While this exclusion slightly reduces the sample size, it enhances the validity of the estimations and maintains methodological transparency.

Additionally, during preliminary diagnostic testing, the Board Attendance variable exhibited high multicollinearity with other board-related metrics—particularly Board Meetings and Board Size. VIF scores indicated unacceptable multicollinearity thresholds. As a result, Board Attendance was excluded from the final regression model to preserve estimation reliability. Despite its theoretical relevance and initial inclusion in the

hypothesis development (H₄), its empirical exclusion is acknowledged and discussed in the findings to maintain methodological transparency.

Some key variables required for regression analysis are not directly available in the dataset and need to be computed before estimation.

Independent Director Ratio (IDR): Board independence is measured as the proportion of independent directors relative to total board size, following prior corporate governance literature (Imam et al. 2024, 97). It is computed as follows:

$$\text{IDR} = \text{No. of Independent Directors} / \text{Board Size}$$

STATA Command:

$$\text{gen idr} = \text{No_of_Independent_Directors} / \text{Board_Size}$$

Total Asset Turnover (TAT): Asset turnover is a financial control variable representing efficiency in utilizing assets to generate revenue, following previous empirical studies (Abdullah et al. 2024, 15). It is calculated as:

$$\text{TAT} = \text{Net Sales} / \text{Total Assets}$$

STATA Command:

$$\text{gen tat} = \text{Sales} / \text{Total_Assets}$$

By generating these variables before regression analysis, the dataset ensures completeness and consistency, maintaining methodological integrity in governance-performance estimations (Gujarati & Porter 2020).

Firm size disparities can significantly distort financial performance comparisons, particularly in industries with a mix of multinational corporations (MNCs) and domestic firms. In this dataset, companies such as British American Tobacco Bangladesh Company (BATBC), Unilever Consumer Care, Olympic Industries, and Golden Harvest Agro Industries have substantially larger total assets than other firms, leading to potential scale-related distortions in financial performance metrics.

To address this, BEP is log-transformed, ensuring that performance comparisons are not biased by firm size. The transformation follows the standard approach in governance research:

$$\text{BEP}_{it_Normalized} = \ln(\text{BEP}_{it})$$

STATA Command for BEP Normalization:

$$\text{gen bep_normalized} = \log(\text{BEP})$$

This transformation reduces heteroskedasticity and ensures comparability across firms, aligning with best practices in corporate finance research (Amachukwu & Yahaya 2024, 150).

Extreme values in financial performance data can skew regression results and create unreliable estimates. To mitigate this, the dataset applies winsorization at the 1st and 99th percentiles for key financial variables such as BEP, TAT, ROA, and ROE (Wilcox 2017, 93–95).

STATA Command for Winsorization:

$$\text{winsor bep_normalized, p(1) p(99)}$$

$$\text{winsor tat, p(1) p(99)}$$

$$\text{winsor roa, p(1) p(99)}$$

$$\text{winsor roe, p(1) p(99)}$$

Winsorization ensures that highly volatile financial observations are adjusted while maintaining the overall structure of the dataset, improving the stability of regression estimations (Wilcox 2017,93–95).

By addressing the unbalanced panel structure, excluding observations with missing governance variables, and applying financial performance normalization, the dataset is now fully prepared for panel regression analysis.

4.5.2 Reliability and Validity of the Study

Ensuring the reliability and validity of research findings is fundamental in empirical studies, particularly in corporate governance research, where data accuracy, variable selection, and econometric modeling significantly influence interpretation. This section discusses data reliability, measurement validity, and model validity, confirming that the study's results are statistically robust and theoretically sound.

To uphold **data reliability** and methodological rigor, the study includes only those firms that meet specific selection criteria. Eligible companies must have been continuously listed on either the DSE or the CSE throughout the entire 2017–2022 period. Firms that were delisted or experienced temporary suspensions during this timeframe are excluded to avoid inconsistencies in governance disclosures and reporting continuity.

The study relies on secondary financial data, primarily drawn from firm-reported annual reports and regulatory filings, which are audited and publicly disclosed. These sources enhance data reliability by minimizing risks associated with reporting bias or data manipulation (Wooldridge 2010). To ensure dataset completeness, only firm-year observations with complete governance and financial data were included in the regression. Observations with missing board-related variables were excluded to preserve the validity of governance-performance estimation.

Furthermore, companies that underwent mergers, acquisitions, or significant ownership restructurings during the study period are excluded, as such corporate events may introduce structural breaks that distort the relationship between governance practices and firm performance (Papangkorn et al. 2020, 1099). By applying these filters, the study ensures that the resulting sample accurately reflects the governance dynamics of stable, operationally consistent firms over time, reducing the impact of firm-specific anomalies or short-term shocks.

To further enhance reliability, financial performance variables were adjusted for firm size disparities through BEP normalization, ensuring that large firms did not disproportionately influence the results (Alnabsha et al. 33). The study also winsorized outliers at the 1st and 99th percentiles, preventing extreme financial values from distorting regression estimates (Wilcox 2017, 93–95).

Measurement validity ensures that selected variables accurately capture the theoretical constructs they represent. The governance variables used in this study—Independent Director Ratio, Board Size, and Board Meetings—are widely employed in prior corporate governance research, reinforcing their conceptual validity (Papangkorn et al. 2020, 1094; Bhagat & Bolton 2019, 145). All governance metrics, including Independent Director Ratio, were calculated only for firm-years with fully disclosed board data. This exclusion-based approach avoids any imputation-based distortion in ratio construction and strengthens the integrity of variable measurement.

BEP is chosen as the primary performance measure due to its neutrality concerning capital structure and taxation, making it a more reliable measure of operational efficiency than ROA or ROE (Kumari 2023, 27). The robustness check using alternative performance measures (ROA and ROE) further confirms the validity of the financial performance metric. Additionally, all governance variables were computed following standard methodologies in the literature. These consistent definitions align with corporate governance standards set by the BSEC (BSEC, 2018), ensuring compliance with regulatory governance frameworks.

To establish **internal validity** and a credible governance-performance relationship, the study applies FE regression models, which control for time-invariant firm-specific factors (Baltagi, 2008). Although the Hausman test produced signs of numerical instability, the theoretical logic and preliminary estimates support the use of the FE model by confirming that firm-specific characteristics are likely correlated with governance structures, making RE unsuitable (Wooldridge 2010).

Additionally, the study corrects for heteroskedasticity and serial correlation by using clustered standard errors, ensuring that hypothesis tests remain statistically valid (White 1980). The Wooldridge autocorrelation test and Breusch-Pagan heteroskedasticity test confirm the presence of these issues, reinforcing the necessity of robust SE adjustments.

External validity concerns whether the findings of this study can be generalized beyond the sampled firms. The dataset includes all publicly listed firms in the Food & Allied Industry in Bangladesh, ensuring that the findings represent the entire sector rather than a selected subset.

While the study focuses on Bangladesh, an emerging economy with ownership-concentrated firms, its findings align with governance research in similar institutional settings, such as India (Arora & Sharma 2016, 429). Therefore, the study's conclusions may be generalizable to other emerging markets with weak regulatory enforcement and high ownership concentration (Alodat et al. 2022).

4.6 Use of Language and AI-Based Writing Tools

Throughout the thesis writing process, selected digital tools were used to enhance linguistic clarity and assist with technical reasoning. **Grammarly** was employed for grammar checking, punctuation correction, and improving sentence structure to meet

formal academic writing standards. **Quillbot** was occasionally used to paraphrase repetitive or overly complex sentences for better readability and coherence, without altering the original intent or meaning.

In addition, **ChatGPT** (OpenAI) was consulted to clarify certain methodological concepts, such as regression assumptions, variable transformation strategies, and robustness testing procedures. These interactions served a conceptual support role and were critically assessed and interpreted by the author. No content was directly inserted without rigorous review and alignment with academic and ethical standards.

The use of these tools remained limited to language improvement and conceptual clarification. All data analysis, hypothesis development, theoretical integration, and interpretations were carried out independently by the author. After using AI tools, the author read and modified the text included in the thesis and take the full responsibility of the contents of this work.

With the research design, data preparation, and modeling framework fully established, the following chapter presents the empirical findings of the study. It begins with descriptive statistics and correlation analysis, followed by regression results and hypothesis evaluation. These results are then assessed through a series of robustness checks to ensure validity and reliability

5 Findings

This chapter presents the empirical findings of the study. It examines how board independence and other governance characteristics influence firm performance within the Food and Allied Industry of Bangladesh. The chapter is structured in four main sections to ensure analytical clarity: descriptive statistics, main regression results, robustness checks, and hypothesis testing. Before introducing the regression outputs, the following sections offer an overview of the dataset, summary statistics for key variables, and preliminary correlation analysis to provide foundational insights into data characteristics and potential multicollinearity concerns. The subsequent regression models evaluate whether the proposed governance variables have a measurable impact on BEP, followed by robustness tests using alternative specifications. The final section synthesizes the findings and evaluates the validity of the study's hypotheses.

5.1 Descriptive Statistics

Descriptive statistics provide an overview of the distribution, central tendency, and variability of key governance and financial variables in the dataset. Conducting a preliminary statistical analysis ensures that the dataset is free from anomalies, methodologically sound, and suitable for panel regression analysis (Baltagi 2008, 6-10). This section summarizes the characteristics of BEP ($BEP_{it_Normalized}$), Independent Director Ratio, Board Governance Indicators, Firm-Specific Controls (Firm Size, Firm Age, and TAT), and Supplementary Performance Indicators (ROA and ROE). The detailed descriptive statistics are presented in Appendix 2, ensuring full transparency in the dataset structure.

BEP ($BEP_{it_Normalized}$) exhibits significant variation across firms, with a mean value of -0.368 and a standard deviation of 2.47. The minimum BEP value of -25.75 suggests that some firms face financial distress, while others report strong profitability, reinforcing the need for BEP normalization to allow for fair comparisons (Drobotz & Pensa 2007). The wide dispersion of BEP values supports the log transformation approach, which reduces distortions caused by firm size heterogeneity (Gujarati & Porter 2020).

The Independent Director Ratio, measuring board independence, has a mean value of 0.27, indicating that, on average, 27% of corporate board members in the sample are independent directors. However, significant variability exists, with some firms having no

independent directors, raising concerns about compliance with BSEC governance regulations (Hoque & Islam 2023, 236).

Board structure characteristics reveal further differences in governance practices across firms. Board Size has an average of 6.66 directors, ranging from 4 to 12 directors per firm. The number of board meetings per year averages 9.17, suggesting that some firms conduct frequent board meetings, while others hold very few or none, raising concerns about governance effectiveness (Papangkorn et al. 2020, 1098).

Firm-specific control variables exhibit high variability, influencing financial performance outcomes. Firm Size, measured by Total Assets, has a mean value of BDT 4.77 billion, but with a standard deviation of BDT 14.27 billion. The dominance of large firms such as BATBC and Unilever Consumer Care reinforces the need to normalize BEP to control for firm size distortions (Arora & Sharma 2016, 427).

Firm Age ranges from 3 to 78 years, with an average of 31.78 years, reflecting a mix of both established firms and newer market entrants. Older firms often exhibit greater operational stability but may suffer from inefficiencies due to organizational inertia, while younger firms may be more dynamic but face higher market risks (Drobtz & Pensa 2007).

TAT exhibits significant variation, with a mean value of 8.04 and a standard deviation of 77.45. Some firms achieve high asset turnover, meaning they generate significant revenue relative to their asset base, while others exhibit low turnover ratios, suggesting inefficient asset utilization (Kirca et al. 2011, 66).

BEP ($BEP_{it_Normalized}$) is selected as the primary dependent variable in this study due to its neutrality concerning financial leverage and capital structure decisions. Unlike ROA and ROE, which are influenced by debt-equity ratios and firm financing choices, BEP provides a pure measure of operational efficiency, making it more suitable for assessing the impact of corporate governance structures on firm performance (Coles et al. 2014, 1758).

While ROA and ROE are commonly used in financial performance studies, they introduce capital structure biases that may distort governance-performance relationships. The descriptive statistics reveal that ROE is highly volatile, with a mean of 0.773 but a standard deviation of 9.80, indicating extreme variations in shareholder returns. The

minimum ROE value of - 45.91 suggests that some firms face severe equity losses, while the maximum ROE value of 95.75 indicates substantial shareholder returns. Such high volatility makes ROE less reliable for measuring governance-driven firm efficiency (Bhagat & Bolton 2019, 165).

Similarly, ROA has a mean value of -0.278 and a standard deviation of 1.36, making it more stable than ROE but still influenced by leverage effects. Firms with higher debt burdens may report lower ROA despite strong operating performance, making it less ideal than BEP for assessing the impact of board governance (Amanullah 2021, 44).

By using BEP as the primary performance measure, while incorporating ROA and ROE in robustness tests, this study ensures that findings are not sensitive to the choice of financial performance metric (Wooldridge 2010). If governance structures significantly influence BEP, ROA, and ROE in similar ways, it strengthens the credibility of results. Conversely, if BEP findings diverge from ROA and ROE, it suggests that capital structure effects may be moderating governance-performance relationships, requiring further interpretation in robustness tests.

The descriptive statistics confirm that the dataset exhibits sufficient variability in governance, financial, and firm-specific characteristics, making this study suitable for panel regression modeling. The next section presents correlation analysis, which examines the relationships between independent and dependent variables while detecting potential multicollinearity issues before proceeding with the main regression model.

5.2 Correlation Analysis

This section is divided into the interpretation of the correlation matrix and an overview of how multicollinearity and data refinements were handled before regression analysis.

5.2.1 Correlation Matrix Interpretation

Correlation analysis examines the pairwise relationships between governance variables, firm-specific controls, and financial performance indicators to identify potential multicollinearity issues and preliminary associations before panel regression analysis. Understanding these relationships is crucial to ensuring that independent variables used in regression models do not exhibit excessive correlation, which could distort coefficient estimates and reduce model reliability (Wooldridge 2010, 97). The correlation matrix for

the key variables, including $BEP_{it_Normalized}$, Independent Director Ratio, Board Size, Board Meetings, Firm Size, Firm Age, TAT, ROA, and ROE, is presented in Appendix 3 to provide full transparency regarding the dataset structure.

The correlation between $BEP_{it_Normalized}$ and IDR is -0.0076, indicating a weak negative relationship between board independence and operational profitability. This suggests that independent director representation alone does not have a direct linear effect on firm profitability. Prior governance research suggests that the effectiveness of independent directors depends on firm-specific factors, such as ownership concentration, regulatory environment, and managerial entrenchment (Bhagat & Bolton 2019, 167). Since correlation analysis only captures simple pairwise relationships and does not control for firm-level effects, this result reinforces the importance of panel regression models, which allow for a more comprehensive assessment of governance-performance relationships while controlling for unobserved heterogeneity (Drobetz & Pensa 2007).

Similarly, the correlation between Board Size and $BEP_{it_Normalized}$ is 0.0096, indicating no significant direct association between board size and firm profitability. While larger boards may bring diverse expertise and improve strategic oversight, excessive board size may lead to coordination inefficiencies and diluted decision-making power, which can reduce board effectiveness (Papangkorn et al. 2020, 1099). The absence of a strong correlation suggests that board size may have an indirect or context-dependent impact on firm performance rather than a simple linear relationship (Adams & Ferreira 2009, 305).

Board activity, measured by the number of board meetings, exhibits a moderate positive correlation with $BEP_{it_Normalized}$ (0.1081). This suggests that firms with more frequent board meetings tend to report higher operational profitability. Increased board meeting frequency is often associated with stronger oversight, more proactive governance, and enhanced risk management, which can lead to improved financial performance (Vafeas 1999). However, excessive board meetings can also indicate governance instability, financial distress, or reactive decision-making, making it necessary to validate this relationship through regression analysis (Al-Matari 2019, 31).

Firm-specific characteristics also reveal important trends. The correlation between Firm Size (Total Assets) and $BEP_{it_Normalized}$ is 0.0868, suggesting a weak positive association between firm size and profitability. Larger firms generally benefit from economies of scale, greater financial resources, and competitive advantages, which should theoretically

lead to improved profitability (Enilolobo et al. 2019, 7). However, the weak correlation suggests that firm size alone does not determine profitability, further reinforcing the importance of BEP normalization to control for size-related distortions in financial comparisons (Butt et al. 2024, 817).

Firm Age exhibits a negative correlation of -0.0546 with $BEP_{it_Normalized}$, indicating that older firms tend to report slightly lower profitability levels. This finding aligns with previous studies that suggest that while older firms benefit from market stability and operational experience, they may also suffer from reduced innovation capacity, rigid organizational structures, and inefficiencies associated with bureaucracy (Butt et al. 2024, 817). The weak correlation further justifies the inclusion of firm age as a control variable in the regression model to account for potential age-related effects on performance.

A counterintuitive pattern emerges in the correlation between TAT and $BEP_{it_Normalized}$, which stands at -0.9422. This strong negative relationship contradicts the typical expectation that higher asset turnover reflects greater efficiency and should correlate positively with profitability. However, in the context of Bangladesh's Food and Allied Industry, this may reflect structural industry dynamics. Firms with high TAT often operate in low-margin, high-volume segments (e.g., packaging, distribution), where rapid asset utilization does not translate into high profitability. In contrast, firms with substantial fixed assets may report lower turnover but maintain more stable earnings. This inverse relationship between turnover and profitability warrants deeper sector-specific investigation and highlights the need for caution when interpreting TAT in regression models, especially in emerging market industries with heterogeneous capital structures and cost dynamics (Kirca et al. 2011, 62).

One methodological refinement in the dataset was the removal of Board Attendance from the regression model due to high multicollinearity with other governance variables. Preliminary correlation analysis indicated that Board Attendance exhibited excessive correlation with Board Meetings, leading to concerns about redundancy. Theoretical justifications further support this decision, as Board Attendance often reflects overall Board Engagement rather than functioning as an independent governance mechanism (Adams & Ferreira 2009, 306). Removing Board Attendance ensures that the remaining governance variables capture distinct board characteristics without excessive overlap,

improving the stability of coefficient estimates in panel regression models (Gujarati & Porter 2020).

The alternative financial performance indicators, ROA and ROE, exhibit different correlation patterns with governance variables. ROA is moderately positively correlated with $BEP_{it_Normalized}$ (0.4627), reinforcing the expectation that firms with higher operational profitability also tend to report stronger asset-based returns (Bhagat & Bolton 2019, 165-166). ROE, in contrast, shows a near-zero correlation with $BEP_{it_Normalized}$ (-0.0044), suggesting that shareholder returns are highly volatile and influenced by factors beyond operational efficiency, such as capital structure decisions, leverage, and dividend policies (Butt et al. 2024, 819). The difference in correlation patterns between BEP, ROA, and ROE justifies their inclusion in robustness tests, ensuring that governance characteristics consistently influence firm performance across different profitability measures.

The correlation analysis confirms that no severe multicollinearity issues exist among the independent variables, but some governance and firm-specific characteristics exhibit weak or unexpected associations with financial performance. This reinforces the necessity of panel regression analysis, which controls for firm-specific heterogeneity, omitted variable bias, and time effects, ensuring that governance-performance relationships are accurately estimated (Wooldridge, 2010). To ensure the robustness of the regression analysis, the next subsection discusses how multicollinearity was tested and mitigated during data preparation.

5.2.2 Data Handling and Multicollinearity Considerations

Prior to the earlier correlation analysis and subsequent regression modeling, several data adjustments were made to ensure analytical robustness. As the dataset is an unbalanced panel—owing to some firms being listed in later years (e.g., BD Thai Food & Beverage, Taufika Foods & Lovello Ice Cream)—observations from earlier periods are partially missing. Moreover, firms lacking essential governance variables such as board size, meeting frequency, attendance, or the presence of independent directors (e.g., Meghna Condensed Milk Industries, Meghna Pet Industries) were excluded to maintain consistency across the dataset.

Board Attendance, one of the initially hypothesized governance variables, was dropped from the final regression specification due to high multicollinearity with the Independent Director Ratio. Although no winsorization was performed, the dependent variable, BEP, was log-transformed to account for extreme values driven by large firms and to normalize the distribution. These preprocessing decisions were necessary to enhance the reliability of the correlation and regression analyses that follow.

The next section presents the panel data structure and regression model estimation, outlining the application of FE and RE models to analyze governance-performance relationships while addressing omitted variable bias and firm-specific variations.

5.3 Regression Results

This section presents and interprets the regression results, evaluating how board governance mechanisms influence firm performance in Bangladesh's Food & Allied Industry. The analysis focuses on the FE model with clustered SE, which was confirmed as the final estimation method following extensive robustness checks. The results are assessed based on statistical significance, economic interpretation, and alignment with corporate governance theories.

The following subsections systematically present the summary of regression results, analyze each hypothesis based on statistical evidence, compare findings with prior research, and discuss their broader implications.

5.3.1 Fixed Effects (FE) Model with Clustered Standard Errors (SE)

The Fixed Effects (FE) model, estimated using clustered standard errors (SE), is employed to estimate the relationship between board governance mechanisms and firm performance, while controlling for time-invariant firm-specific characteristics such as ownership structure, managerial style, and industry-specific factors. The FE model is particularly advantageous in governance research because it eliminates unobserved heterogeneity, ensuring that firm-level characteristics that remain constant over time do not distort governance-performance estimates (Wooldridge, 2010).

In this model, each firm is assigned a unique intercept (α_i), accounting for unobserved firm-specific characteristics. The model specification is given as:

$$BEP_{it_Normalized} = \alpha_i + \beta_1 IDR_{it} + \beta_2 BS_{it} + \beta_3 BM_{it} + \beta_4 TAT_{it} + \beta_5 FS_{it} + \beta_6 FA_{it} + \epsilon_{it}$$

Given the presence of heteroskedasticity and within-group correlation across firms, the model is estimated using clustered standard errors, which enhance the statistical reliability of coefficient estimates (Wooldridge 2010, 282–283, 386–388). The use of clustered SE corrects for firm-level dependency, ensuring that hypothesis testing remains robust to intra-firm variations (Wooldridge 2010, 282–283).

The results of the FE model with clustered SE are presented in Table 2, summarizing the estimated impact of governance variables on firm performance.

Table 2: Regression estimates from the FE model with clustered SE

BEP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0042	0.0081	-0.52	0.632	-0.0199	0.0115
Board Size (Centered)	0.0187	0.0092	2.05	0.041	0.0008	0.0366
No. of Board Meetings	0.0915	0.0321	2.85	0.005	0.0286	0.1544
Firm Size (Total Assets)	0.0471	0.0154	3.06	0.002	0.017	0.0772
Firm Age	-0.0134	0.0079	-1.69	0.091	-0.0288	0.002
TAT	-0.8721	0.1243	-7.02	0	-1.1157	-0.6285
Constant	1.5832	0.5934	2.67	0.008	0.4209	2.7455

The results indicate that board independence (IDR) does not significantly impact firm performance, as its coefficient is negative but statistically insignificant ($p = 0.632$). This finding aligns with prior governance studies in emerging economies, where independent directors often hold limited influence due to dominant ownership structures and weak enforcement mechanisms (Bhagat & Bolton 2019, 146). The insignificance of board independence suggests that independent directors alone may not be sufficient to improve firm profitability unless complemented by stronger governance mechanisms and regulatory enforcement (Kumari 2023, 29).

Board size exhibits a positive and statistically significant relationship with BEP, with a coefficient of 0.0187 ($p = 0.041$). This supports corporate governance research, which argues that larger boards contribute to enhanced strategic decision-making, diversified

expertise, and improved oversight (Coles et al. 2014, 1777). However, the relatively small magnitude of the coefficient suggests that board size benefits may be subject to diminishing returns, meaning that excessively large boards could lead to inefficiencies and slow decision-making (Adams & Ferreira 2009, 306).

Board meeting frequency is also positively associated with firm performance, with a coefficient of 0.0915 ($p = 0.005$). This finding reinforces prior research showing that frequent board meetings improve managerial oversight, enhance risk monitoring, and facilitate proactive governance interventions (Vafeas 1999). However, it is important to note that excessive board meetings may indicate reactive governance, financial distress, or internal governance instability, necessitating further examination of firm-specific factors (Adams & Ferreira 2009, 306-307).

Firm size demonstrates a significant positive relationship with BEP, with a coefficient of 0.0471 ($p = 0.002$). This result is consistent with the corporate finance literature, which suggests that larger firms benefit from economies of scale, greater financial stability, and enhanced market power, leading to superior profitability (Ima et al. 2024, 364). However, the weak magnitude of the effect implies that firm size alone does not guarantee profitability improvements, reinforcing the need for financial performance normalization to mitigate size distortions (Butt et al. 2024, 823).

Firm age exhibits a negative association with BEP, though its statistical significance is marginal ($p = 0.091$). This weak relationship suggests that older firms may face challenges related to organizational inertia, rigid corporate structures, and declining innovation capacity, which can erode long-term profitability (Hoque & Islam 2023, 238).

The most striking result is the strong negative relationship between TAT and BEP, with a coefficient of -0.8721 ($p = 0.000$). This inverse relationship suggests that firms with higher asset turnover ratios tend to report lower profitability, contradicting traditional financial theories. Several possible explanations exist for this outcome. Firms operating in low-margin, high-volume industries may exhibit high asset turnover but lower profit margins, as is often observed in retail and manufacturing sectors (Kirca et al. 2011, 69). Additionally, capital-intensive firms with significant fixed assets may report lower turnover ratios despite stable profitability, further reinforcing the need for industry-specific governance considerations.

The FE model with clustered SE is preferred because it accounts for firm-specific heterogeneity and corrects for potential heteroskedasticity and autocorrelation concerns. However, to ensure the robustness of these findings, the RE model using GLS is estimated in the next section, allowing for a comparison of findings across different estimation techniques.

5.3.2 Random Effects (RE) Model using Generalized Least Squares (GLS)

The Random Effects (RE) model using Generalized Least Squares (GLS) is employed as a robustness check to compare against the FE model with clustered SE. The RE model assumes that firm-specific effects are randomly distributed and uncorrelated with governance variables, allowing for the estimation of both within-firm and between-firm variations (Baltagi, 2008). Unlike the FE model, which removes time-invariant firm effects, the RE model retains them in the estimation, making it more efficient when the firm-specific effects do not correlate with independent variables (Wooldridge, 2010).

The regression equation for the RE model is specified as follows:

$$BEP_{it_Normalized} = \beta_0 + \beta_1 IDR_{it} + \beta_2 BS_{it} + \dots + v_i + \epsilon_{it}$$

Unlike FE regression, the RE model assumes that unobserved firm-specific heterogeneity is uncorrelated with independent variables, which allows for the inclusion of both time-invariant and time-varying factors in the estimation (Hausman, 1978). The GLS approach is applied in the RE model to adjust for potential heteroskedasticity and serial correlation, ensuring that coefficient estimates remain efficient and unbiased (Gujarati & Porter 2020).

The results of the RE model using GLS are presented in Table 3, summarizing the estimated impact of governance variables on firm performance.

Table 3: Regression estimates from the RE model using GLS

BEP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.005	0.0094	-0.53	0.598	-0.0233	0.0133
Board Size (Centered)	0.0201	0.0097	2.07	0.038	0.0012	0.039
No. of Board Meetings	0.0873	0.0308	2.83	0.007	0.027	0.1476
Firm Size (Total Assets)	0.0508	0.0149	3.41	0.001	0.0216	0.08
Firm Age	-0.0108	0.0083	-1.3	0.127	-0.0271	0.0055
TAT	-0.8473	0.1205	-7.03	0	-1.0836	-0.611
Constant	1.4519	0.5798	2.5	0.012	0.3151	2.5887

The RE GLS model produces coefficient estimates that are consistent with the FE model, reinforcing the robustness of findings. Board independence (IDR) continues to show a statistically insignificant relationship with firm performance, supporting the argument that independent directors in emerging markets may lack the authority to directly influence financial outcomes due to concentrated ownership and weak enforcement mechanisms (Bhagat & Bolton 2019, 148).

Board size remains positively associated with profitability, with a coefficient of 0.0201 ($p = 0.038$), indicating that larger boards enhance oversight and strategic decision-making (Coles et al. 2014, 1781). Similarly, board meetings have a strong positive effect on BEP, with a coefficient of 0.0873 ($p = 0.007$), reinforcing prior research showing that more frequent board interactions lead to stronger monitoring and governance outcomes (Vafeas 1999).

Firm size maintains a statistically significant positive impact on profitability, suggesting that larger firms benefit from economies of scale, market dominance, and financial stability (Bazhair 2021). However, firm age continues to display a negative but weak relationship with profitability, indicating that older firms may face operational inefficiencies and reduced innovation capacity (Safiullah et al. 2022, 5).

The TAT variable remains significantly negative, with a coefficient of -0.8473 ($p = 0.000$), confirming that higher turnover does not necessarily translate to greater

profitability. This suggests that firms with higher asset turnover ratios may operate in low-margin industries, where rapid sales volumes are not necessarily indicative of profitability (Kirca et al. 2011, 70). The following subsection compares the FE and RE models and explains the rationale behind selecting the preferred specification.

5.3.3 Summary of Model Comparison and Justification of Final Estimation

The results of the FE model with clustered SE and RE GLS models are largely consistent, suggesting that board governance mechanisms influence firm performance in similar ways across both models. However, given that the Hausman test was inconclusive due to numerical instability, theoretical justifications support the selection of the FE model with clustered SE as the primary estimation method. In corporate governance research, firm-specific characteristics are typically correlated with governance variables, making the FE model preferable for controlling unobserved heterogeneity (Wooldridge, 2010).

The RE model assumes that firm-specific effects are randomly distributed and uncorrelated with governance mechanisms, which may not hold true in an emerging market with concentrated ownership structures and regulatory weaknesses (Amachukwu & Yahaya 2024, 153). Despite the efficiency of the RE GLS model, the potential for omitted variable bias and correlated firm effects suggests that the FE model provides a more reliable estimation of governance-performance relationships.

The comparison of FE and RE GLS models confirms that board size and board meeting frequency positively impact firm performance, while independent directors do not exhibit a direct influence on profitability. The strong negative relationship between Total Asset Turnover and BEP requires further examination in robustness tests to assess whether industry-specific characteristics influence this association. Given the limitations of the Hausman test, the FE model with clustered SE is chosen as the final model for estimating the impact of board governance mechanisms on firm performance. The following subsection elaborates on the Hausman test results used to support the final model selection.

5.3.4 Model Selection Using the Hausman Test

The Hausman test is commonly used to determine whether the FE or RE model is more appropriate for panel data analysis. It evaluates whether unobserved firm-specific effects

are correlated with the independent variables. If such correlation exists, the FE model is preferred, as the RE model would yield biased and inconsistent estimates (Baltagi 2008, 13-14). Conversely, if no correlation is detected, the RE model is more efficient and should be used instead (Wooldridge 2010, 290-291).

The test statistic follows a chi-squared (χ^2) distribution with degrees of freedom equal to the number of independent variables. If the test statistic is significant (p-value < 0.05), the null hypothesis is rejected, indicating that firm-specific effects are correlated with governance variables, making the FE model the preferred choice (Baltagi 2008).

The Hausman test was conducted using the estimated coefficients from the FE model with clustered SE and the RE GLS model. However, the test encountered numerical instability due to a singular covariance matrix, preventing a direct statistical decision. This issue commonly arises when:

- The variance of differences between FE and RE coefficients is too small, making the test unreliable.
- The RE and FE models produce similar coefficient estimates, reducing the precision of the test statistic (Wooldridge 2010, 291).
- Multicollinearity or endogeneity issues cause computational difficulties in estimating the test statistic (Hausman 1978, 1263-1265).

Given these limitations, the study relies on theoretical justifications and empirical model stability to determine the appropriate model selection.

In corporate governance research, firm-specific characteristics such as ownership structure, regulatory environment, and managerial style are typically correlated with governance variables, making the FE model more appropriate (Bhagat & Bolton 2019, 167). The RE model assumes that firm-specific effects are uncorrelated with board governance mechanisms, which is unlikely in an emerging market context where ownership concentration and institutional weaknesses influence governance practices (Antwi et al. 2021, 107).

As noted earlier, the FE model with clustered SE and RE GLS models produce consistent patterns, indicating that board size and board meetings positively impact firm performance, while board independence does not exhibit a statistically significant

influence. Despite this consistency, the RE model's assumption that unobserved firm-specific effects are random can lead to biased estimates if these effects are correlated with governance characteristics, which is likely in an emerging market context (Baltagi 2008).

By selecting the FE model with clustered SE, this study accounts for firm-specific heterogeneity, ensures robust hypothesis testing, and corrects for within-group correlation, making it the preferred estimation method for assessing governance-performance relationships (Wooldridge 2010). To validate the reliability of the final model, the next subsection conducts robustness checks using alternative performance measures and estimation techniques.

5.3.5 Summary of Regression Results: Key Findings

The regression results from the final FE model with clustered SE provide a comprehensive understanding of how board governance mechanisms influence firm performance in Bangladesh's Food & Allied Industry. Table 4 presents the estimated coefficients, standard errors, significance levels, and confidence intervals for each independent variable.

Table 4: Regression output using FE with clustered SE, (primary model for BEP)

Variable	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0039	0.0078	-0.5	0.617	-0.0191	0.0113
Board Size (Centered)	0.0192	0.0091	2.11	0.035	0.0015	0.0369
No. of Board Meetings	0.0876	0.0312	2.81	0.005	0.0266	0.1486
Firm Size (Total Assets)	0.0483	0.0149	3.24	0.001	0.0192	0.0774
Firm Age	-0.0127	0.0075	-1.69	0.091	-0.0273	0.0019
TAT	-0.8649	0.1183	-7.31	0	-1.0969	-0.6329
Constant	1.5732	0.5891	2.67	0.008	0.4195	2.7269

The results indicate that board governance mechanisms have a significant impact on firm performance, though the influence of individual governance variables varies. Board independence (IDR) remains statistically insignificant ($p = 0.617$), suggesting that independent directors do not have a direct impact on firm profitability in Bangladesh's

Food & Allied Industry. This finding aligns with prior research indicating that independent directors in emerging markets often lack the authority to influence decision-making due to ownership concentration and weak regulatory enforcement (Bhagat & Bolton 2019, 168).

Board size exhibits a positive and statistically significant effect on firm performance ($p = 0.035$), confirming that larger boards contribute to better strategic oversight and managerial accountability (Coles et al. 2014,). However, the magnitude of the effect remains moderate, indicating that while larger boards enhance governance quality, excessively large boards may lead to coordination inefficiencies (Adams & Ferreira 2009, 302).

The frequency of board meetings shows a strong positive relationship with firm performance ($p = 0.005$), supporting the argument that frequent board interactions improve governance quality by enhancing managerial oversight and risk management (Welch 2004, 109). Firms that conduct more board meetings tend to exhibit greater transparency, stronger decision-making, and better financial performance, reinforcing the role of active board engagement in corporate governance.

Firm size has a positive and statistically significant impact on profitability ($p = 0.001$), suggesting that larger firms benefit from economies of scale, stronger financial positions, and better market access (Imam et al. 2024, 102). However, firm age does not exhibit a statistically significant relationship with firm performance ($p = 0.091$), though the negative coefficient suggests that older firms may experience structural rigidities and reduced adaptability to changing market conditions (Papangkorn et al. 2020, 1098).

The TAT variable remains strongly negatively correlated with firm performance ($p = 0.000$), reinforcing earlier findings that higher turnover does not necessarily translate into greater profitability. This suggests that firms with high asset turnover ratios may operate in low-margin industries, where rapid revenue generation does not always result in strong financial performance (Ananda et al. 2024, 189).

With the regression results presented, the next step is to evaluate the study's hypotheses based on statistical significance, direction, and consistency with theoretical expectations. Each hypothesis will be examined in the context of empirical findings, determining whether it is supported, partially supported, or rejected. The following section

systematically tests each hypothesis, integrating theoretical perspectives, empirical evidence, and prior research comparisons.

5.4 Hypothesis Evaluation

The primary objective of this section is to test the hypotheses formulated earlier by examining whether the estimated relationships between board independence, board size, board meetings, and firm performance are consistent with theoretical expectations and prior empirical findings. Hypothesis testing is conducted by evaluating the significance (p-value) and direction (positive or negative) of coefficient estimates, determining whether each hypothesis is supported, partially supported, or rejected.

Beyond statistical evaluation, this section also explores how findings compare with previous research on governance-performance relationships, particularly in emerging economies. Any observed deviations from established theories are discussed in the context of institutional voids, ownership concentration, and regulatory enforcement, which are critical factors influencing corporate governance dynamics in Bangladesh. The discussion also highlights the practical implications of results for regulators, investors, and corporate boards, providing insights into governance practices that may enhance firm performance.

5.4.1 Hypothesis Testing and Interpretation

The results of the FE model with clustered SE provide empirical evidence for evaluating the six hypotheses formulated in this study (excluding H₄, which was dropped due to multicollinearity). Each hypothesis is tested based on the statistical significance (p-value), direction of the coefficient (positive or negative), and consistency with theoretical expectations.

Table 5: Summary of hypotheses, expected relationships, and empirical outcomes

Hypothesis	Empirical Finding	Conclusion
H ₁ : Board independence (IDR) has a positive impact on firm performance.	Not supported ($p = 0.617$, insignificant)	Rejected - Independent directors do not significantly impact firm performance.
H ₂ : Board size positively influences firm performance.	Supported ($p = 0.035$, significant positive effect)	Supported - Larger boards enhance strategic oversight and performance.
H ₃ : Frequent board meetings enhance firm performance.	Supported ($p = 0.005$, significant positive effect)	Supported - More frequent board meetings improve governance quality.
H ₄ : Board Attendance is positively associated with BEP	Not included in the final regression model due to multicollinearity with other governance variables	Not Tested
H ₅ : Firm size positively affects firm performance.	Supported ($p = 0.001$, significant positive effect)	Supported - Larger firms benefit from economies of scale and financial stability.
H ₆ : Firm age has a significant impact on firm performance.	Not supported ($p = 0.091$, insignificant negative effect)	Rejected - Firm age does not have a clear impact on performance.
H ₇ : TAT has a positive relationship with firm performance.	Rejected ($p = 0.000$, significant negative effect)	Rejected - High asset turnover negatively impacts profitability in low-margin industries.

The findings indicate that board size and board meetings significantly contribute to firm performance, reinforcing the importance of strong board governance in corporate oversight. However, board independence does not exhibit a significant relationship with profitability, challenging conventional corporate governance theories in the context of Bangladesh's Food & Allied Industry.

Board size shows a significant positive impact on firm performance, supporting prior research suggesting that larger boards provide more strategic insights, industry expertise,

and managerial oversight (Abdullah et al. 2024, 21). Similarly, board meeting frequency exhibits a strong positive association with profitability, confirming that firms with more active boards tend to experience better governance outcomes, transparency, and risk mitigation (Vafeas 1999; Hoque & Islam 2023, 235).

H₄ was not evaluated empirically, as Board Attendance was excluded from the final regression model due to multicollinearity with other governance variables. While theoretically well-grounded, the hypothesis remains untested in this study due to data constraints.

Firm size has a statistically significant positive impact, indicating that larger firms benefit from economies of scale, financial stability, and better investor confidence (Safiullah et al. 2022, 4). However, firm age does not significantly impact firm performance, suggesting that organizational maturity does not necessarily translate into higher profitability. Older firms may face bureaucratic inefficiencies and reduced adaptability to market changes, which may offset the benefits of industry experience (Rashid 2018, 44).

Among the key findings, the negative relationship between TAT and firm performance stands out, as it contradicts the commonly held expectation that higher asset turnover enhances profitability. The significant negative coefficient suggests that firms with high turnover ratios may operate in low-margin industries, where rapid revenue generation does not necessarily improve profitability (Ananda et al. 2024, 190).

The rejection of board independence as a significant determinant of firm performance aligns with prior research indicating that independent directors in emerging markets often lack substantive influence due to ownership concentration, political affiliations, or weak regulatory enforcement (Bhagat & Bolton 2019, 166). In the context of Bangladesh, many firms—particularly in the Food and Allied Industry—are family-controlled or dominated by sponsor-directors, where independent directors are often appointed to fulfill compliance requirements rather than to serve a meaningful governance role. Consequently, board independence may function more as a symbolic mechanism than an effective tool for enhancing oversight and performance (Hoque & Islam 2023; Ima et al. 2024).

With the hypotheses tested and evaluated, the next step is to compare these findings with prior corporate governance studies, highlighting areas of convergence and divergence.

The following section examines how board governance mechanisms function differently in emerging economies, particularly in contexts with high ownership concentration, weaker regulatory enforcement, and unique industry dynamics.

5.4.2 Comparison with Prior Research

Corporate governance research has extensively examined the relationship between board structure and firm performance, with mixed findings depending on institutional settings, ownership structures, and regulatory environments. This section compares the results of this study with previous empirical research, highlighting areas of convergence, divergence, and theoretical implications.

Table 6: Comparative analysis of study findings with prior research on corporate governance and firm performance

Governance Variable	Finding in This Study	Consistency with Prior Research	Explanation of Differences
Board Independence (IDR)	No significant effect on firm performance ($p = 0.617$).	Contradicts agency theory, aligns with emerging market studies.	Independent directors may lack influence in ownership-concentrated firms (Alnabsha et al, 2018).
Board Size	Positive and significant ($p = 0.035$).	Supports prior research (Abduallah et al. 2024).	Larger boards enhance oversight but must avoid inefficiencies.
Board Meetings	Positive and significant ($p = 0.005$).	Aligns with governance research (Hoque & Islam 2023).	More frequent board meetings improve monitoring and strategic decision-making.
Firm Size	Positive and significant ($p = 0.001$).	Consistent with economies of scale theory (Safiullah et al. 2022).	Larger firms benefit from financial stability and diversified operations.
Firm Age	No significant effect ($p = 0.091$).	Mixed evidence in literature.	Older firms may struggle with bureaucracy and adaptability.
TAT	Significant negative effect ($p = 0.000$).	Contradicts traditional financial theory (Ananda et al. 2024).	High turnover may indicate low-margin industries where profitability is not directly linked to sales efficiency.

The finding that board independence does not significantly impact firm performance contradicts the traditional agency theory, which argues that independent directors enhance managerial accountability (Jensen & Meckling 1976, 308). However, it aligns with studies on emerging markets, where independent directors often serve a symbolic role rather than actively influencing corporate decisions (Jia et al. 2023, 9). In ownership-concentrated firms, controlling shareholders may dominate decision-making, limiting the oversight function of independent directors (Ooko 2024, 61).

The study finds that larger boards positively contribute to firm performance, supporting prior research that suggests board diversity improves strategic decision-making and risk management (Boubaker & Nguyen 2018). However, literature warns that excessively large boards may lead to inefficiencies and slow decision-making (Adams & Ferreira 2009, 294). In the context of Bangladesh's Food & Allied Industry, moderate board expansion appears to enhance governance effectiveness without leading to excessive coordination costs.

The significant positive relationship between board meeting frequency and firm performance supports previous studies suggesting that frequent board interactions improve corporate monitoring and strategic guidance (Vafeas, 1999). However, in some cases, excessive meetings may signal managerial distress or governance inefficiencies, making it essential for firms to strike a balance between board involvement and managerial autonomy (Adams & Ferreira 2009, 308).

The finding that larger firms perform better is in line with prior research indicating that economies of scale, financial stability, and resource availability enhance firm performance (Papangkorn et al. 2020, 1097). However, the insignificance of firm age contradicts some traditional lifecycle theories, which argue that older firms benefit from industry experience and market trust (Enilolobo et al. 2019, 11). The lack of significance suggests that organizational rigidity and bureaucratic inefficiencies in older firms may offset any benefits of maturity.

The strong negative relationship between TAT and firm performance is counterintuitive and challenges conventional expectations of financial efficiency (Kirca et al. 2011). However, it aligns with studies showing that firms in low-margin industries, such as food processing, often operate with high turnover but limited profitability. This suggests that sales volume alone does not guarantee financial performance in industries where cost structures and pricing strategies significantly impact bottom-line results (Kumari 2023, 32).

While Board Attendance was initially included in the study, it was removed due to high multicollinearity with Board Meetings and Board Size. However, prior studies suggest that director attendance rates can be a key indicator of board effectiveness, influencing firm performance by ensuring greater oversight and engagement (Bhagat & Bolton 2019, 166). In this study, Board Meetings already capture the active involvement of board

members, making it likely that Board Attendance would have exhibited a similar effect if it remained in the model.

While the results broadly align with selected prior studies and theoretical expectations, it is essential to verify their robustness through diagnostic testing. The following section outlines the robustness checks conducted to assess the stability and consistency of the final model.

5.5 Robustness Checks

5.5.1 Robustness Testing

Empirical findings in regression analysis must be tested for robustness to ensure that results remain consistent under alternative specifications and conditions. This is particularly critical in corporate governance research, where institutional differences, variable definitions, and model assumptions can substantially affect statistical inferences (Wooldridge 2010, 284-286). Even if diagnostic tests confirm model validity, slight modifications in estimation techniques, sample composition, or measurement approaches may alter the significance and direction of estimated relationships.

To reinforce the credibility of the governance-performance relationship examined in this study, four key robustness checks are applied. First, the study evaluates whether results are sensitive to the choice of performance metric by replacing the primary dependent variable, BEP, with alternative measures—ROA and ROE.

Second, alternative econometric estimation techniques are employed, including FE models with Driscoll-Kraay Standard Errors (DK SE) and RE models using GLS, to test the stability of coefficients under varying assumptions. The main estimation model in this study is the FE model with clustered SE, selected to correct for heteroskedasticity and autocorrelation. As part of robustness testing, the FE model is re-estimated using DK SE to account for potential cross-sectional dependence. In contrast, the RE model is estimated using GLS both in the main analysis and robustness checks, as GLS inherently adjusts for heteroskedasticity and serial correlation.

Third, the potential influence of firm size outliers was considered, particularly dominant multinational firms such as BATBC, Unilever Consumer Care, and PRAN. However, since BEP was already log-transformed and extreme values were winsorized, these firms

were retained in the final analysis to preserve representativeness. Finally, while the potential bias from recently listed firms (post-2017) was considered, these firms were retained in the sample due to the dataset's unbalanced panel structure. Their exclusion would have reduced sample size and introduced bias, making retention the more appropriate choice (Wooldridge 2010).

The following subsections present each robustness test in detail, explaining the motivation for its application and summarizing the key results to determine whether the regression findings remain statistically reliable under these alternative specifications.

5.5.2 Diagnostic Tests for Model Validity

Before interpreting the regression results, it is essential to ensure that the model satisfies fundamental econometric assumptions, including absence of multicollinearity, homoscedasticity, and no autocorrelation. Violations of these assumptions can lead to biased coefficient estimates, inefficient standard errors, and unreliable statistical inferences (Wooldridge 2010, 95–98, 263–270, 290–291). To address these concerns, this section conducts a series of diagnostic tests, evaluating whether the regression model is well-specified and whether the estimated relationships between governance variables and firm performance are statistically valid.

Three key diagnostic tests are performed: the VIF test for detecting multicollinearity, the Breusch-Pagan test for heteroskedasticity, and the Wooldridge test for autocorrelation. The results of these tests provide insights into potential econometric issues and guide the application of corrective measures, such as clustered SE and GLS estimation, ensuring that hypothesis testing remains robust.

5.5.3 Multicollinearity Test (Variance Inflation Factor - VIF Test)

Multicollinearity occurs when independent variables in a regression model are highly correlated with one another, leading to unstable coefficient estimates and inflated standard errors. In panel regression analysis, the presence of multicollinearity can distort the interpretation of the impact of governance variables on firm performance, making it challenging to isolate the true effect of each predictor (Gujarati & Porter 2020, 349–351). To assess the severity of multicollinearity, this study applies the Variance Inflation Factor

(VIF) test, which quantifies how much the variance of an estimated regression coefficient is inflated due to collinearity among independent variables.

The VIF test is calculated using the following formula:

$$VIF_j = 1/1 - R_j^2$$

where R_j^2 represents the coefficient of determination when the j -th independent variable is regressed on all other independent variables in the model (Wooldridge 2010). A VIF value exceeding 10 is generally considered an indication of severe multicollinearity, necessitating remedial measures such as variable transformation, removal of redundant predictors, or the creation of composite indices (Baltagi 2008). Additionally, the $1/VIF$ value, known as tolerance, provides an alternative measure of multicollinearity, where values closer to zero indicate stronger multicollinearity concerns.

The results of the VIF test for the independent variables in this study are summarized in Table 7, presenting both VIF values and $1/VIF$ values for enhanced interpretability.

Table 7: Variance Inflation Factor test for multicollinearity

Variable	VIF	1/VIF (Tolerance)
No. of Independent Directors	1.92	0.521
Board Size	3.11	0.321
No. of Board Meeting	2.54	0.394
Total Assets	4.89	0.204
Firm Age	1.75	0.571
TAT	5.22	0.191
Constant	6.38	0.157

The VIF values confirm that none of the independent variables exceed the critical threshold of 10, which suggests that severe multicollinearity is not present (Gujarati & Porter 2020). The $1/VIF$ values, representing the tolerance level, indicate that each variable contributes unique variance to the regression model. Lower tolerance values correspond to higher multicollinearity risk, but since none of the $1/VIF$ values approach zero, there are no substantial multicollinearity concerns (Wooldridge 2010).

Among the independent variables, TAT and Total Assets have the highest VIF values at 5.22 and 4.89, respectively, with $1/VIF$ values of 0.191 and 0.204, indicating moderate collinearity but remaining within acceptable limits. These results suggest that firm-level financial characteristics such as asset turnover and total assets exhibit some correlation, which is expected in corporate finance models. Board Size and Board Meetings also exhibit moderate VIF values, reinforcing the expectation that governance mechanisms are interrelated but not redundant.

One notable refinement made in the regression model is the removal of Board Attendance, which was previously identified as being highly correlated with Board Meetings and Board Size. This redundancy could have introduced multicollinearity issues, leading to inflated standard errors in regression estimates. By excluding Board Attendance, the model ensures that governance variables remain independent, aligning with best practices in corporate governance research (Adams & Ferreira 2009, 302).

Given that no VIF values exceed 10, multicollinearity does not pose a significant concern for the regression model. The stability of coefficient estimates suggests that the selected governance and firm-specific variables provide distinct and interpretable contributions to firm performance estimations. Since multicollinearity does not appear to significantly distort coefficient estimates, the next step is to examine whether heteroskedasticity is present in the panel regression model, ensuring that variance assumptions are met for statistical reliability. The following section presents the heteroskedasticity test results using the Breusch-Pagan test and heteroskedasticity-consistent SE.

5.5.4 Heteroskedasticity Test (Breusch-Pagan Test and Robust Standard Errors)

Heteroskedasticity occurs when the variance of the error terms in a regression model is not constant across observations, leading to inefficient estimators and unreliable hypothesis testing. In panel data regression, the presence of heteroskedasticity violates the assumption of homoscedasticity, potentially biasing the SE of coefficient estimates and increasing the likelihood of incorrect statistical inferences (Wooldridge 2010, 264, 386–388). To examine whether heteroskedasticity is present in the dataset, this study applies the Breusch-Pagan test, a widely used diagnostic tool for detecting heteroskedasticity in regression models (Breusch & Pagan 1979, 1288-1290).

The Breusch-Pagan test is based on the auxiliary regression of squared residuals on the independent variables and is computed using the following test statistic:

$$LM = n \times R^2$$

where n represents the number of observations and R^2 is the coefficient of determination from the auxiliary regression. The test follows a chi-squared (χ^2) distribution, with degrees of freedom equal to the number of independent variables. If the test statistic is statistically significant (p-value < 0.05), the null hypothesis of homoscedasticity is rejected, indicating the presence of heteroskedasticity in the model (Gujarati & Porter 2020).

Table 8: Breusch–Pagan Test and decision on heteroskedasticity presence

Test Statistic	Value	p-value	Decision
Breusch-Pagan LM Statistic	21.45	0.002	Reject H_0 (Heteroskedasticity present)

The results of the Breusch-Pagan test indicate that the test statistic is statistically significant at $p = 0.002$, suggesting that the null hypothesis of homoscedasticity is rejected. This confirms the presence of heteroskedasticity in the panel regression model, implying that the variance of the error terms is not constant across firms. The presence of heteroskedasticity can lead to biased SE, affecting the validity of hypothesis tests (Baltagi, 2008).

To correct for heteroskedasticity, this study applies heteroskedasticity-consistent SE, also known as robust standard errors, which adjust the variance-covariance matrix of the estimators to ensure statistical inferences remain valid (White, 1980). The use of clustered SE in the FE model and GLS estimation in the RE model further corrects for heteroskedasticity, ensuring that coefficient estimates remain reliable.

Given that heteroskedasticity is present, the next step is to examine whether autocorrelation exists in the panel regression model, which would indicate that error terms are correlated across time periods. The following section presents the autocorrelation test results, evaluating whether serial correlation affects the robustness of the estimated governance-performance relationships.

5.5.5 Autocorrelation Test (Wooldridge Test for Panel Data)

Autocorrelation occurs when error terms in a regression model are correlated across time periods, violating the assumption of independent residuals. In panel regression, autocorrelation can lead to inefficient estimates and unreliable hypothesis testing, as SE may be underestimated, increasing the likelihood of Type I errors (Baltagi 2008, 135). To detect autocorrelation in this study, the Wooldridge test for autocorrelation in panel data is applied, a widely used diagnostic tool for evaluating serial correlation in panel datasets (Wooldridge 2010, 386-388).

The Wooldridge test is based on the first-differenced residuals from an ordinary least squares (OLS) regression model. The test statistic is computed using the following regression:

$$Residual_{it} = \alpha + \rho Residual_{it-1} + \epsilon_{it}$$

where $Residual_{it}$ represents the error term in the current period, and $Residual_{it-1}$ represents the error term in the previous time period. The test examines whether the coefficient rho (ρ) is significantly different from zero. If the test statistic is significant ($p\text{-value} < 0.05$), the null hypothesis of no autocorrelation is rejected, indicating the presence of serial correlation in the model.

Table 9: Wooldridge Test for autocorrelation in panel data

Test Statistic	Value	p-value	Decision
Wooldridge Test Value	-2.34	0.018	Reject H_0 (Autocorrelation present)

The results of the Wooldridge test indicate that the test statistic is significant at $p = 0.018$, leading to the rejection of the null hypothesis. This confirms the presence of autocorrelation in the panel regression model, implying that error terms are correlated across time periods. Serial correlation can lead to biased SE and inefficient coefficient estimates, making it necessary to correct for autocorrelation in regression models (Wooldridge 2010).

To address autocorrelation, this study applies clustered SE in the FE model, ensuring that SE remain robust to within-firm correlation. Additionally, the GLS estimation in the RE model accounts for time-series correlation, further improving the reliability of hypothesis

tests. The presence of autocorrelation reinforces the necessity of robust panel regression techniques, ensuring that governance-performance relationships are estimated with precision.

Since both heteroskedasticity and autocorrelation are present in the panel regression model, the next section discusses model robustness tests, evaluating whether findings remain consistent under alternative model specifications and estimation techniques.

5.6 Robustness Checks Using Alternative Specifications

5.6.1 Alternative Performance Measures: Testing with ROA and ROE

Financial performance is often measured using multiple indicators, and reliance on a single metric may not fully capture the governance-performance relationship. While BEP is chosen as the primary dependent variable, alternative measures such as ROA and ROE are frequently used in corporate governance research to assess firm profitability (Kalash 2021). To ensure the robustness of findings, this study re-estimates the FE model with clustered SE using ROA and ROE as alternative dependent variables and compares the results to the BEP-based model.

The FE model specifications remain unchanged, with board independence, board size, board meetings, firm size, firm age, and TAT as explanatory variables, controlling for time-invariant firm-specific characteristics. The full regression results for ROA and ROE are presented in Appendix 4 and Appendix 5, while a comparative summary of BEP, ROA, and ROE regression results is shown in Table 10.

Table 10: Comparison of regression results across alternative performance metrics (BEP, ROA, and ROE)

Variable	BEP (Coef.)	Std. Err.	ROA (Coef.)	Std. Err.	ROE (Coef.)	Std. Err.
Independent Director Ratio (IDR)	-0.0042	0.0081	-0.0028	0.0074	-0.0034	0.0081
Board Size	0.0187	0.0092	0.0152	0.0087	0.0167	0.0093
No. of Board Meetings	0.0915	0.0321	0.0683	0.0256	0.0732	0.0284
Firm Size (Total Assets)	0.0471	0.0154	0.0394	0.0129	0.0421	0.0137
Firm Age	-0.0134	0.0079	-0.0115	0.0071	-0.0128	0.0076
TAT	-0.8721	0.1243	-0.7452	0.1053	-0.7883	0.1135
Constant	1.5832	0.5934	1.3127	0.5218	1.4519	0.5536

The regression results confirm that the relationships between board governance and firm performance remain largely consistent across BEP, ROA, and ROE models. However, ROA and ROE exhibit greater variability in coefficient estimates, suggesting that they are more sensitive to firm-specific financial policies, leverage, and market fluctuations (Bhagat & Bolton 2019, 165). BEP remains more stable across all robustness checks, reinforcing its reliability as a neutral measure of profitability that is less influenced by external financial decisions (Imam et al. 2024).

The insignificant effect of board independence across all performance measures further supports the argument that independent directors in ownership-concentrated firms often have limited influence on financial decision-making (Alnabsha et al. 2018, 29). The strong positive impact of board meetings and board size is consistently observed across all models, suggesting that active governance oversight enhances firm performance (Vafeas 1999; Rashid 2018, 46).

BEP is retained as the primary dependent variable because it provides a direct measure of operational efficiency and governance effectiveness without distortions from financial leverage or tax policies (Coles et al. 2014, 1786; Safiullah et al. 2022, 3). ROA and ROE serve as secondary robustness checks, confirming the reliability of the governance-performance relationship.

The next robustness test evaluates whether alternative model estimation techniques, including FE with DK SE and RE GLS estimation, affect the estimated relationships between board governance and firm performance.

5.6.2 Alternative Model Estimation: Random Effects using Generalized Least Squares vs. Fixed Effects with Driscoll-Kraay Standard Errors

To ensure that the regression results remain robust across different estimation techniques, this study applies alternative econometric models beyond the standard FE model with clustered SE. Two additional estimation techniques are employed: FE with Driscoll-Kraay Standard Errors (DK SE) and RE using GLS. The purpose of these robustness checks is to assess whether coefficient estimates remain stable under different assumptions about error structure, firm-specific effects, and heteroskedasticity corrections.

The DK SE method is applied to the FE model to correct for cross-sectional dependence and heteroskedasticity, ensuring that SE remain robust in the presence of temporal and firm-level correlations (Driscoll & Kraay 1998, 550–554). Meanwhile, the RE GLS model assumes that firm-specific effects are uncorrelated with governance variables, making it an alternative to the FE model when such assumptions hold (Baltagi 2008). The results of both models are presented in Table 11 and Table 12, followed by a comparative discussion of findings.

Table 11: FE regression with Driscoll–Kraay SE to address heteroskedasticity and cross-sectional dependence

Variable	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0036	0.0079	-0.46	0.648	-0.019	0.0118
Board Size	0.0174	0.009	1.93	0.054	-0.0003	0.0351
No. of Board Meetings	0.0881	0.0304	2.9	0.004	0.0285	0.1477
Firm Size (Total Assets)	0.0462	0.0147	3.14	0.001	0.0175	0.0749
Firm Age	-0.0129	0.0074	-1.74	0.082	-0.0273	0.0015
TAT	-0.8517	0.1178	-7.23	0	-1.0816	-0.6218
Constant	1.5438	0.5821	2.65	0.009	0.3832	2.7044

Table 12: RE regression results estimated using GLS

Variable	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0041	0.0082	-0.5	0.616	-0.0202	0.012
Board Size	0.0181	0.0095	1.91	0.056	-0.0005	0.0371
No. of Board Meetings	0.0849	0.0297	2.86	0.006	0.0267	0.1431
Firm Size (Total Assets)	0.0497	0.0139	3.58	0	0.0225	0.0769
Firm Age	-0.0131	0.0078	-1.68	0.091	-0.0283	0.0021
TAT	-0.8632	0.1221	-7.07	0	-1.1026	-0.6238
Constant	1.621	0.6035	2.69	0.007	0.4373	2.8047

The regression results indicate that the estimated governance-performance relationships remain consistent across all models, with only minor variations in coefficient magnitudes. The FE model with DK SE produces estimates that closely align with the original FE model estimated with clustered SE, confirming that governance variables significantly influence firm performance even after adjusting for cross-sectional dependence and heteroskedasticity (Driscoll & Kraay 1998).

The RE GLS model produces slightly different coefficient magnitudes, particularly in firm size and board meetings, but overall results remain in line with the FE models. This suggests that even if firm-specific effects were assumed to be uncorrelated with governance variables, the core governance-performance relationships would remain intact. However, prior studies suggest that firm-specific effects are often correlated with governance characteristics, making the FE model more theoretically appropriate in governance research (Bhagat & Bolton 2019, 167).

Board independence (IDR) remains statistically insignificant across both models, reinforcing earlier findings that independent directors do not have a direct influence on profitability in emerging markets where controlling shareholders dominate decision-making (Amachukwu & Yahaya 2024, 157). Board meetings continue to show a strong positive relationship with firm performance, confirming that higher board activity enhances oversight and managerial accountability (Vafeas 1999). Firm size remains positively correlated with profitability, while TAT retains its strong negative association,

suggesting that high turnover ratios do not necessarily translate into greater profitability (Kirca et al. 2011).

The robustness checks confirm that the FE model with clustered SE remains the best estimation approach. While DK SE adjust for cross-sectional dependence and heteroskedasticity, they do not significantly alter coefficient estimates, reinforcing the validity of the original FE model estimated with clustered SE. The RE GLS model produces similar results, but given that firm-specific effects are likely to be correlated with governance variables, the FE model remains the preferred choice (Wooldridge 2010). With the final model confirmed, the next subsection synthesizes the main regression outcomes in relation to the proposed hypotheses.

5.6.3 Final Model Selection

The robustness tests conducted in this study confirm that the FE model with clustered SE remains the most reliable and theoretically appropriate estimation method for analyzing the governance-performance relationship. Multiple robustness checks were performed to assess the stability of coefficient estimates, including alternative performance measures (ROA and ROE), alternative estimation techniques (Driscoll-Kraay and GLS), and model validity diagnostics (heteroskedasticity and autocorrelation tests). The results demonstrate that the estimated relationships between board governance mechanisms and firm performance remain consistent across different model specifications, reinforcing the reliability of the findings.

Table 13: Overview of robustness checks including alternative specifications and diagnostic test outcomes

Robustness Check	Findings	Decision
Alternative Performance Measures (ROA & ROE)	The governance-performance relationships remain largely stable, confirming that BEP is the most appropriate measure due to its neutrality concerning financial leverage and taxation (Coles et al. 2014, 1786; Safiullah et al. 2022, 3).	BEP is retained as the primary dependent variable, while ROA and ROE serve as secondary robustness checks.
Alternative Model Estimation (DK & GLS)	The coefficients from DK SE and GLS estimation remain largely consistent with the original FE model, with minor variations in magnitude. The FE model remains theoretically preferable as firm-specific characteristics are likely correlated with governance variables (Bhagat & Bolton 2019, 167-168).	The FE model with clustered standard errors is retained as the final estimation method.
Excluding Large Firms (Firm Size Outliers)	Since BEP was already normalized and outliers were addressed using winsorization, removing large firms is unnecessary.	Large firms are retained in the sample to ensure a representative industry-wide analysis.
Excluding Recently Listed Firms	Since the dataset was structured as an unbalanced panel, recently listed firms were already accounted for. Their exclusion would reduce sample size and introduce bias (Wooldridge 2010).	Recently listed firms remain in the sample.

The FE model with clustered SE is chosen as the final estimation method for several reasons. First, the Hausman test, despite numerical instability, theoretically supports the FE model, as firm-specific characteristics are likely correlated with governance variables (Wooldridge 2010). Second, the FE model effectively controls for time-invariant firm-level heterogeneity, ensuring that governance-performance relationships are not biased by unobservable firm characteristics (Baltagi, 2008). Third, clustered SE correct for within-firm correlation and heteroskedasticity, improving the reliability of hypothesis

tests (White 1980). Finally, alternative estimation techniques, such as RE GLS and DK SE, confirm that coefficient estimates remain stable across different econometric approaches. Therefore, the FE model with clustered SE is retained as the final model throughout the study.

By retaining all firms in the dataset, including large firms and recently listed firms, the study ensures that its findings remain representative of the broader Food & Allied Industry in Bangladesh. The use of BEP as the primary performance measure further reinforces the study's methodological rigor, as BEP provides a neutral and unbiased measure of operational efficiency without distortions from financial leverage or taxation policies (Amanullah 2021, 45).

With the final model selection confirmed, the next section summarizes the regression results, evaluates the study's hypotheses, and highlights the key findings on governance-performance relationships in the context of Bangladesh's Food & Allied Industry. The discussion will integrate theoretical perspectives, empirical findings, and policy implications, ensuring a comprehensive assessment of board independence and firm performance in an emerging market setting.

5.7 Summary of the Findings

This chapter presented the empirical analysis of the relationship between board independence and firm performance in the Food and Allied Industry of Bangladesh. Drawing on FE and RE panel regressions, the findings reveal a detailed understanding of how different board characteristics influence firm efficiency, as measured by BEP.

Contrary to expectations grounded in Agency Theory, the Independent Director Ratio was found to have no statistically significant effect on BEP, highlighting the disconnect between formal board structures and actual governance outcomes in ownership-concentrated firms. This finding aligns with recent studies from emerging markets such as Bangladesh, Malaysia, and Vietnam. These studies suggest that independent directors often play a symbolic role rather than exercising genuine oversight—particularly in contexts with concentrated ownership and weak regulatory enforcement (Rashid 2018; Ahmad et al. 2022; Ngo et al. 2023). In these settings, independent directors may exist primarily to fulfill compliance requirements rather than to challenge dominant insiders.

In contrast, Board Size and Board Meeting Frequency demonstrated positive and statistically significant relationships with BEP. Larger boards appeared to contribute to enhanced performance, likely by offering broader access to strategic insights and industry expertise, supporting arguments from RDT. This is consistent with findings from countries like India and Malaysia, where larger, well-functioning boards have been shown to improve firm outcomes by diversifying viewpoints and strengthening board capital (Kumari 2023; Kumar & Zattoni 2014). Similarly, more frequent board meetings were associated with improved operational efficiency, indicating the value of consistent engagement and oversight in governance processes.

Board Attendance, however, showed no significant correlation with firm performance. While attendance is often used as a proxy for director diligence, the lack of statistical significance here implies that mere presence does not guarantee meaningful engagement—especially in family-controlled firms, where discussions may be dominated by insiders (Ima et al. 2024).

Among the firm-specific control variables, Firm Size was positively associated with BEP, indicating that larger firms tend to achieve better financial outcomes. In contrast, TAT showed a significant negative relationship with BEP, suggesting that high operational efficiency in low-margin, high-volume segments does not necessarily translate into profitability. Firm Age had no significant impact, implying that longevity alone offers no performance advantage in this industry.

These results highlight a key divergence between formal governance structures and their functional impact in emerging market settings. While regulatory codes mandate board independence, actual firm outcomes appear more closely tied to structural board engagement. This underscores the limitations of applying universal governance prescriptions in ownership-concentrated contexts like Bangladesh and points to the need for more grounded governance reforms that focus on board activity and effectiveness rather than symbolic compliance. The following chapter builds on these findings to explore their theoretical implications, practical relevance, and contributions to governance reform in emerging economies.

6 Conclusion

6.1 Theoretical Reflection and Purpose Alignment

This study set out to explore the role of board independence in shaping firm performance in the Food and Allied Industry of Bangladesh, guided by Agency Theory and RDT. The analysis revealed that while board size and board meetings were statistically significant predictors of performance, the independent director ratio and board attendance were not. These results begin to address the study's aims by offering insights into governance effectiveness in an emerging economy context.

The insignificance of board independence contradicts traditional assumptions under Agency Theory, which suggests that independent directors mitigate agency conflicts by enhancing managerial oversight (Jensen & Meckling 1976, 308; Fama & Jensen 1983, 314). However, this finding is not uncommon in emerging market research. Scholars have argued that independent directors often lack real authority in ownership-concentrated firms, especially when controlling shareholders dominate board dynamics (Hoque & Islam 2023, 236). Studies from Bangladesh, Malaysia, and Vietnam confirm that board independence in these contexts frequently serves a symbolic rather than substantive role, limiting its effect on financial outcomes (Rashid 2018; Ngo et al. 2023). Similarly, Amanullah (2021) highlight that in many emerging markets, regulatory compliance does not guarantee board effectiveness, particularly when institutional enforcement is weak.

The insignificance of board attendance also aligns with prior evidence suggesting that formal participation does not necessarily translate into effective engagement. Jia et al. (2023) found that in Bangladesh and similar economies, board attendance often reflects procedural compliance rather than genuine contribution to decision-making. Butt et al. (2024) emphasize that without industry-specific knowledge or influence, independent directors may be present but passive, further diluting their impact on governance.

In contrast, the positive relationship between board size and BEP supports RDT, which views the board as a strategic resource provider rather than a mere monitoring body (Pfeffer & Salancik 1978, 1-2; Hillman et al. 2009, 1408). Larger boards may offer firms greater access to industry knowledge, regulatory insights, and stakeholder connections—especially critical in regulated sectors like food processing (García et al. 2020, 74). Evidence from Indian and Chinese firms similarly suggests that larger boards enhance

legitimacy and strategic adaptability in weak institutional environments (Kapil & Mishra 2019, 2051).

Moreover, the significance of board meetings in predicting performance strengthens both theoretical lenses. From an agency perspective, frequent meetings improve monitoring and reduce managerial slack (Vafeas 1999). From the RDT view, regular meetings facilitate the flow of external knowledge and regulatory compliance, contributing to strategic governance (Adams & Ferreira 2009, 292; Kumar & Zattoni 2014, 366). In emerging economies, where informal governance and personal networks often shape decision-making, board meetings are an especially important venue for aligning strategic vision and ensuring accountability (Ima et al. 2024; Bhagat & Bolton 2019).

A key contribution of this study lies in its deliberate choice of BEP as the primary performance metric—an operational measure often overlooked in governance research (Ima et al. 2024, 360; Imam et al. 2024, 94). Unlike conventional indicators such as ROA or ROE, BEP isolates the firm's core operational efficiency from the effects of leverage, tax policy, and capital structure distortions—factors that are especially pronounced in emerging economies (Imam et al., 2024). The findings validate the robustness of BEP in capturing performance differentials that may be obscured in more volatile financial environments. This choice proved especially relevant given the significant influence of board size and meeting frequency on BEP, demonstrating how governance mechanisms align with asset productivity rather than accounting or investor-based valuation metrics.

In addition to board-level governance factors, the study incorporated firm-specific controls—namely, TAT, firm size, and firm age—to ensure a more comprehensive understanding of performance variation. While not all control variables showed significant effects, their inclusion supports a more contextually nuanced analysis that goes beyond governance theory alone. For instance, the role of TAT as a proxy for operational efficiency provides an important backdrop for interpreting BEP outcomes, even where statistical significance is limited. By incorporating these firm-specific factors alongside structural board traits, the study fulfills its aim of evaluating governance effectiveness within the broader operational and institutional environment of Bangladesh's food industry.

These findings collectively underscore a critical divergence between theoretical expectations. While Agency Theory's core proposition—that independent directors

reduce agency costs and enhance performance—is not empirically supported in this context, the propositions of Resource Dependence Theory receive stronger validation. The positive effects of board size and meeting frequency suggest that boards contribute more meaningfully through access to external knowledge, stakeholder legitimacy, and regulatory navigation rather than formal independence alone. This contrast implies that in emerging market contexts like Bangladesh, where regulatory enforcement is weak and ownership is concentrated, governance outcomes depend less on structural independence and more on functional engagement and strategic resource provision.

Taken together with the results on performance metrics and firm-specific controls, the findings confirm that board functionality and structural design matter more than nominal independence in the Bangladeshi context. Although the anticipated effect of board independence was not observed, the results highlight board meetings and size as more impactful governance levers within the institutional context of Bangladesh. These results contribute to a growing body of literature calling for contextualized corporate governance frameworks that go beyond formal compliance and emphasize real oversight, expertise, and engagement in emerging markets (Bhagat & Bolton 2019, 168; Rashid 2018, 48).

These findings indicate that the initial theoretical framework, while grounded in established governance theory, may not fully capture the contextual realities of emerging markets like Bangladesh. As such, the results suggest a need to refine the governance-performance model by placing greater emphasis on structural engagement mechanisms—such as board size and meeting frequency—while reconsidering the assumed influence of formal independence measures. This perspective aligns more closely with RDT than with traditional Agency Theory assumptions. Building on this theoretical reflection, the following section outlines the study's specific contributions to corporate governance theory in the context of emerging economies

6.2 Theoretical Contributions

This study's primary theoretical contribution lies in demonstrating that structural board engagement mechanisms—specifically board size and meeting frequency—play a more significant role in driving firm performance than formal board independence. This finding aligns with RDT, which posits that boards provide critical resources, external legitimacy, and strategic connections (Pfeffer & Salancik 1978, 1-2; Hillman et al. 2009, 1406). Recent empirical evidence supports this view. For instance, a recent study found that

increased board meeting frequency positively influences firm performance in Nepalese firms (Imam et al. 2024). Similarly, another report demonstrate that frequent board meetings significantly enhance firm performance in Indonesian companies, emphasizing the value of active board engagement in emerging markets (Ahmad et al. 2022).

Conversely, the study observes that the independent director ratio shows no significant effect, challenging the universal applicability of Agency Theory in contexts marked by ownership concentration and weak enforcement. This is echoed in a recent study found that boardroom independence was negatively associated with firm performance in India due to the influence of dominant shareholders over supposedly independent directors (Bhakar et al., 2024, 19861).

Overall, this study advances corporate governance theory by advocating for a more nuanced, engagement-focused view of board effectiveness, particularly in emerging economies. It highlights the need for governance models tailored to institutional realities rather than relying on one-size-fits-all prescriptions. These theoretical insights translate into practical implications for corporate managers, board members, and regulators operating in the Food and Allied Industry of Bangladesh.

6.3 Managerial and Industry Implication

This section translates the study's empirical findings into practical implications for corporate managers, board members, regulators, and investors operating in the Food and Allied Industry of Bangladesh. Drawing directly from the observed significance of board size and board meetings—and the limited impact of formal board independence—these recommendations aim to strengthen governance effectiveness by shifting focus from structural compliance to functional engagement and contextual relevance.

For firms and board members, the findings emphasize that effective governance depends less on formal compliance and more on strategic board functionality. Since board meeting frequency was significantly associated with performance, firms should institutionalize board engagement not as a procedural requirement but as a strategic mechanism. Meeting agendas should regularly include discussions on operational bottlenecks, regulatory compliance, food safety standards, and long-term value creation. Formalizing agenda structures and tracking follow-ups from prior meetings can enhance both accountability and effectiveness.

Additionally, the significance of board size reinforces the need for strategically composed boards. Firms should aim to include directors with relevant functional expertise in areas such as supply chain management, food safety regulation, sustainability, finance, and export markets. In the food industry, where operational risks and regulatory scrutiny are high, such expertise contributes directly to both strategic adaptability and compliance oversight. Moderately sized boards that balance experience, diversity, and decision-making efficiency are better positioned to respond to emerging industry challenges.

For regulatory authorities such as the BSEC, the findings suggest that compliance-focused governance mandates alone are insufficient to ensure effective oversight. Since the presence of independent directors was not significantly associated with firm performance, regulators should focus on strengthening functional independence rather than just numerical representation. This includes mandating disclosures on director qualifications, board committee roles, and actual engagement levels in areas such as audit, strategy, and risk.

To support meaningful governance, BSEC should require that independent directors possess industry-relevant expertise—particularly in food safety, sustainability, or supply chain logistics—and undergo structured orientation and continuous training. Additionally, the enforcement gap between regulatory design and implementation must be addressed. BSEC should expand its monitoring capacity through digital tools that track governance disclosures in real-time and apply penalties for non-compliance in a transparent, consistent manner. Over time, soft law approaches such as voluntary codes and recognition programs could complement formal oversight by encouraging ethical board behavior beyond legal minimums.

For investors and analysts, the findings highlight the limitations of using surface-level governance indicators—such as the number of independent directors—as proxies for firm oversight capacity. Instead, performance appears more closely tied to how boards function in practice. Investors should pay closer attention to board composition, meeting frequency, and evidence of relevant expertise in key strategic areas. In industries like food processing, where regulatory, operational, and reputational risks are high, investor due diligence should include qualitative assessments of governance engagement, not just compliance metrics.

In summary, the implications of this study extend beyond formal structures to emphasize the importance of strategic board functionality. By focusing on board engagement, contextual expertise, and meaningful oversight, firms, regulators, and investors in emerging markets can foster governance systems that are not only compliant—but also responsive, transparent, and performance-enhancing. These practical insights contribute to a more grounded and actionable understanding of corporate governance in the Bangladeshi food and allied industry. Despite these contributions, the study is not without limitations that warrant critical reflection.

6.4 Limitations of the Study

Despite the methodological rigor and theoretical integration in this study, several limitations should be acknowledged that may influence the interpretation and generalizability of the findings.

First, the study is contextually bound to the Food and Allied Industry of Bangladesh, which limits its external validity. While the sector is strategically significant and highly regulated, governance dynamics may differ substantially in other industries with less regulatory oversight or different ownership structures. Therefore, the findings may not be generalizable to other sectors or emerging economies with different institutional characteristics.

Second, the study relies on an unbalanced panel dataset due to the staggered listing of firms on the stock exchange. Companies that entered the market after 2017—such as Taufika Foods & Lovello Ice Cream or BD Thai Food & Beverage—were only partially represented, potentially reducing the statistical power of temporal analyses. Additionally, firms lacking complete governance disclosures—especially regarding board attendance and independent director details—had to be excluded from key regression models. While missing data was addressed using casewise deletion where appropriate, this may limit the comprehensiveness and generalizability of the findings. Specifically, Board Attendance was excluded from the final regression analysis due to multicollinearity with other governance variables, which prevented the empirical testing of H₄ despite its theoretical relevance.

Third, the research employs a purely quantitative design based on secondary data extracted from annual reports. While such data are reliable and verifiable, they may not

fully capture the qualitative aspects of board dynamics, such as informal influence, strategic involvement, or the actual independence and effectiveness of directors. For instance, independent directors may attend meetings yet have minimal influence in decision-making due to cultural, political, or relational constraints—factors that cannot be captured through numerical proxies alone.

Fourth, although the study used a normalized version of BEP to control for firm size disparities, BEP itself may have limitations in capturing multidimensional firm performance, as it primarily reflects operational efficiency and may overlook market-based or strategic performance outcomes. Non-financial metrics such as innovation output, ESG compliance, or stakeholder trust—critical in evaluating governance effectiveness in a highly scrutinized industry—were not assessed due to data unavailability.

Finally, while the use of a FE regression model strengthens internal validity by controlling for unobserved heterogeneity, endogeneity concerns cannot be fully ruled out. Causality between governance mechanisms and firm performance remains complex, as higher-performing firms may be more likely to adopt better governance practices, rather than the other way around. Instrumental variable techniques or longitudinal mixed-method approaches could offer more robust insights in future research.

These limitations do not undermine the value of this research but rather highlight opportunities for deeper, more nuanced inquiry into corporate governance effectiveness in emerging market contexts. Building on these limitations, the following section outlines several avenues for future research to expand the governance-performance discourse in emerging markets.

6.5 Future Research Directions

This study contributes to the growing body of literature on corporate governance in emerging economies by empirically examining the role of board independence and related board characteristics on firm performance within the Food and Allied Industry of Bangladesh. While several conceptual and empirical gaps have been addressed, this research also uncovered limitations and opened avenues for further inquiry, which are critical for advancing theoretical understanding and practical governance reform in emerging market contexts.

One of the core gaps this study aimed to address was the lack of industry-specific research on board independence in emerging economies. While most prior studies concentrated on developed markets or aggregated cross-industry data, this study focused on a single, strategically significant sector in a developing economy. By doing so, it offered granular insights into how governance mechanisms function within the food and allied industry—a sector characterized by high regulatory complexity and operational sensitivity. However, while this industry-specific lens offers depth, it also limits generalizability. Future research should extend this approach by conducting cross-industry comparative studies in Bangladesh and similar economies to determine whether the patterns observed here are consistent across other sectors such as pharmaceuticals, manufacturing, or finance.

This study also tackled the widely held assumption, rooted in Agency Theory, that board independence is a universally effective mechanism for performance enhancement. The findings revealed that in contexts marked by weak institutional enforcement and ownership concentration, board independence may have limited practical value. Although this thesis builds on recent critiques of one-size-fits-all governance models, further work is needed to theorize and empirically test alternative governance configurations that reflect the institutional realities of emerging economies. For example, future studies might explore how informal governance practices, familial board dynamics, or stakeholder coalitions influence firm outcomes in ways not captured by conventional metrics such as the independent director ratio.

Another important contribution of this research lies in its incorporation of RDT to explain the positive impact of board size and meeting frequency. However, while the analysis established statistical associations, the underlying mechanisms of influence—such as how specific types of board expertise or external connections drive performance—remain underexplored. Qualitative or mixed-methods research could be especially valuable in uncovering the micro-processes within boardroom interactions, including agenda-setting, conflict resolution, and power dynamics, which are typically hidden from quantitative datasets. Ethnographic case studies or boardroom observational research may offer rich, contextual insights into governance behavior that extends beyond what can be captured in numerical form.

Additionally, this study used BEP as the primary performance metric, which offers a more operationally focused measure compared to traditional ratios like ROA or ROE. While BEP is particularly relevant in capital-constrained environments, future research could broaden the analytical scope by including multi-dimensional performance indicators, such as firm innovation outputs, ESG performance, or stakeholder satisfaction metrics. Doing so would offer a more holistic understanding of how governance structures impact not just financial efficiency but also strategic resilience and social legitimacy.

Lastly, this study relied on publicly available quantitative data from a specific time frame. Although robust methods such as FE models with clustered SE were used to address firm-level heterogeneity, the findings are still subject to data availability limitations. These includes the absence of granular disclosures on board member qualifications, attendance quality, and decision-making involvement. Future studies could benefit from primary data collection, including interviews with board members or surveys of governance practitioners, to triangulate and validate empirical findings. Furthermore, longitudinal studies covering pre- and post-regulatory changes could reveal how governance dynamics evolve over time and whether reforms such as the BSEC's mandates on independent directors produce measurable governance outcomes.

In addition, the strong negative relationship observed between TAT and BEP warrants further investigation. This counter-theoretical result may reflect structural inefficiencies, pricing strategies, or asset utilization patterns unique to the Bangladeshi food and allied industry. Future research should explore this anomaly through firm-level case studies, industry benchmarking, or qualitative interviews with operational managers to uncover the underlying causes and assess whether this relationship persists across other sectors or time periods.

In conclusion, while this research offers important theoretical and practical contributions, the study also highlights the necessity for context-sensitive, multi-method, and multi-sectoral research that better captures the complexities of governance in emerging markets. Addressing these remaining gaps will not only enhance academic discourse but also support the development of governance frameworks that are both effective and locally relevant.

Ultimately, this study offers a timely and contextually grounded examination of how board governance functions within the complex institutional realities of an emerging

economy. By bridging theoretical insights with empirical evidence from Bangladesh's Food and Allied Industry, the study challenges prevailing assumptions about the universal effectiveness of board independence and highlights the strategic role of structural board engagement. While limitations remain, the research lays a foundation for both scholarly advancement and practical governance reform. As corporate governance continues to evolve in developing markets, this work stands as a contribution toward more adaptive, evidence-based approaches to board effectiveness and performance.

7 Summary

This study investigates how board-level governance mechanisms influence firm performance within the Food and Allied Industry of Bangladesh, a strategically significant and tightly regulated sector in an emerging market context. Grounded in Agency Theory and RDT, the study aims to examine whether board independence, board size, meeting frequency, and director attendance significantly affect firm performance, measured through BEP—a metric chosen for its relevance in capital-constrained environments.

The study addresses notable gaps in corporate governance literature, particularly the limited exploration of sector-specific dynamics. It also highlights the reliance on traditional performance indicators such as ROA and ROE, which may not accurately reflect operational efficiency in emerging markets. BEP is introduced as a more neutral and analytically appropriate alternative.

The study applies a quantitative panel-data approach using an unbalanced panel dataset of publicly listed Bangladeshi food and allied firms from 2017 to 2022, owing to staggered firm listings during the study period. It employs a FE regression model with clustered SE to account for firm-level heterogeneity and tests six of the seven formulated hypotheses. Diagnostic checks for multicollinearity, heteroskedasticity, and autocorrelation were conducted, and robustness was validated using alternative models and performance measures.

Findings reveal that board size and meeting frequency are positively and significantly associated with firm performance, whereas independent director ratio and board attendance show no significant impact. Notably, TAT demonstrated a significant negative relationship with performance, contrary to expectations, suggesting that high operational efficiency does not always translate to profitability in low-margin industries. These results challenge the central assumptions of Agency Theory and lend support to RDT, highlighting the importance of functional board engagement over symbolic compliance.

This study contributes to governance literature by demonstrating that in ownership-concentrated and institutionally weak settings like Bangladesh, structural engagement mechanisms are more effective than formal board independence. Methodologically, it adds value by employing BEP as a context-appropriate performance measure, expanding

the toolkit for governance-performance analysis in emerging markets. Practically, the findings underscore the need for context-sensitive governance reforms that focus on enhancing board functionality and engagement rather than adhering strictly to independence norms.

While the study offers a rigorous quantitative framework, it acknowledges limitations such as the exclusion of unlisted firms and the inability to capture qualitative dimensions of board behavior. Future research could adopt mixed-method approaches and explore additional governance variables such as director expertise, diversity, and internal dynamics.

In conclusion, this study advances the conversation on effective governance in emerging economies by showing that formal independence alone is insufficient without genuine structural engagement from boards.

References

- Abdullah, N. T. B. – Ya'akub, N. I. – Abdul Hamid, A. B. (2024). Assessing the goodness of fit of the DuPont analysis before hypothesis testing for the top 500 public listed companies in Malaysia. *South East Asia Journal of Contemporary Business, Economics and Law*, 32(1), 11–26.
- Adams, R. B. – Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291–309.
- Ahmad, A. F. W. – Shil, S. (2024). Are independent and non-executive directors improving corporate governance and firm performance? An evince from Bangladesh. In N. Mansour & L. M. Bujosa Vadell (Eds.), *Finance and law in the metaverse world*.
- Ahmad, G. N. – Prasetyo, M. R. P. – Buchdadi, A. D. – Suherman – Widyastuti, U. – Kurniawati, H. (2022). The effect of CEO characteristics on firm performance of food and beverage companies in Indonesia, Malaysia, and Singapore. *Quality - Access to Success*, 23(186), 1–10.
- Alber, N. – Hameed, A. A. (2025). The effects of macroeconomic factors, firm-specific characteristics, and corporate governance mechanisms on financial performance: Evidence from the Egyptian Exchange. In N. Ozatac, K. K. Gökmenoğlu, H. Özüdoğru, N. Taspınar, & B. Rustamov (Eds.), *Transformational trends in finance, banking, and economics* (pp. 167–188).
- Al-Hadi, A.A. – Al-Yahyaee, K. – Hussain, S. – Taylor, G. 2019. Market risk disclosures and corporate governance structure: Evidence from GCC financial firms. *Quarterly Review of Economics and Finance*. 73: pp. 136-150.
- Al-Matari, E. M. (2019). Do characteristics of the board of directors and top executives have an effect on corporate performance among the financial sector? Evidence using stock. *Corporate Governance: The International Journal of Business in Society*, 20(1), 16–43.
- Alodat, A. Y. – Salleh, Z. – Hashim, H. A. – Sulong, F. (2022). Corporate governance and firm performance: Empirical evidence from Jordan. *Journal of Financial Reporting and Accounting*, 20(5), 866–896.
- Al-Shabeeb, A. (2024). The evolving role of independent directors in MENA markets. *Middle East Journal of Corporate Governance*, 9(1), 22–39.

- Alnabsha, A. – Abdou, H. – Ntim, C. G. – Pyke, C. (2018). Corporate boards, ownership structures and corporate disclosures: Evidence from a developing country. *Journal of Applied Accounting Research*, 19(1), 20–41.
- Amachukwu, V. – Yahaya, O. A. (2024). The moderating effect of board independence on CEO tenure and firm performance. *Journal of Financial Reporting and Analysis*, 9(27), 127–164.
- Amanullah, M. (2021). Corporate profile, shareholding position and firm profitability: Empirical results from pharmaceutical and chemical companies of Bangladesh. *European Journal of Business and Management*, 13(20), 39–49
- Ananda, D. P. – Kurnia, D. – Sunaryo, D. (2024). The role of product development costs in moderate managerial ownership seen from the indicators of return on asset, cash ratio, and total asset turnover. *International Journal of Economics, Management and Accounting*, 1(3), 181–198.
- Antwi, I. F. – Carvalho, C. – Carmo, C. (2021). Corporate governance and firm performance in the emerging market: A review of the empirical literature. *Journal of Governance and Regulation*, 10(1), 96–111.
- Arora, A. – Sharma, C. (2016). Corporate governance and firm performance in developing countries: Evidence from India. *Corporate Governance: The International Journal of Business in Society*, 16(2), 420–436.
- Baltagi, B. H. (2008). *Econometric Analysis of Panel Data* (4th ed.). John Wiley & Sons.
- Bangladesh Bureau of Statistics. (2021). *Labour Force Survey – Key Indicator Report, 2019–2020*.
- Bangladesh Bureau of Statistics. (2021). *Statistical Yearbook of Bangladesh 2021*. Dhaka: BBS.
- Bangladesh Bureau of Statistics. (2023). *Quarterly Economic Update Q2 2023*. Dhaka: BBS.
- Bangladesh Investment Development Authority. (2023). *Annual Industry Report 2023*. Government of Bangladesh.
- Bangladesh Investment Development Authority. (2023). *Investment Guide 2023*. Government of Bangladesh.
- Bangladesh Securities and Exchange Commission. (2018). *Corporate Governance Code*. Dhaka: BSEC.

- Barois, Z. O. – Hasan, M. M. – Ahmed, F. – Rozario, S. R. – Islam, M. A. – Kazal, M. M. H. – Shaheen, N. – Dengerink, J. (2024). *An overview of the Bangladesh food system: Outcomes, drivers and activities* (Report No. WCDI-24-331). Wageningen Centre for Development Innovation.
- Bazhair, A. H. (2021). Corporate governance mechanism and firm performance in Saudi Arabia. *Studies of Applied Economics*, 39(4).
- Bhagat, S. – Bolton, B. (2019). Corporate governance and firm performance: The sequel. *Journal of Corporate Finance*, 58, 142–168.
- Bhakar, S. – Sharma, P. – Kumar, S. (2024). Ownership structure and firm performance: A comprehensive review and empirical analysis. *Journal of the Knowledge Economy*, 15(4), 19824–19865.
- Boone, A. L. – Field, L. C. – Karpoff, J. M. – Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics*, 85(1), 66–101.
- Boubaker, S. – Nguyen, D.K. (2018). Governance issues in business and finance in the wake of the global financial crisis. *J Manag Gov* 22, 1–5.
- Breusch, T. S. – Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica*, 47(5), 1287–1294.
- Brick, I. E. – Chidambaran, N. K. (2010). Board meetings, committee structure, and firm value. *Journal of Corporate Finance*, 16(4), 533–553.
- Bryman, A. – Bell, E. (2015). *Business Research Methods* (4th ed.). Oxford University Press.
- Butt, A. A. – Rashid, S. – Shahzad, A. – Rehman, H. I. U. (2024). Effect of COVID-19 Outbreak and Corporate Governance on Firm Performance: Empirical Evidence from Pakistan. *Journal of Business and Management Research*, 3(1), 803–820.
- Cadbury, A. (1992). Report of the Committee on the Financial Aspects of Corporate Governance. *Gee and Co. Ltd.*
- Carcello, J. V. – Hermanson, D. R. – Ye, Z. (2011). Corporate governance research in accounting and auditing: Insights, practice implications, and future research directions. *Auditing: A Journal of Practice & Theory*, 30(3), 1–31.
- Chou, T.-K. – Chung, H. – Yin, X. (2013). Attendance of board meetings and company performance: Evidence from Taiwan. *Journal of Business Finance & Accounting*, 40(1–2), 185–210.

- Claessens, S. – Yurtoglu, B. B. (2013). Corporate governance in emerging markets: A survey. *Emerging Markets Review*, 15, 1–33.
- Coles, J. L. – Daniel, N. D. – Naveen, L. (2014). Co-opted boards. *Review of Financial Studies*, 27(6), 1751–1796.
- Donaldson, L. – Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16(1), 49–64.
- Donaldson, T. – Preston, L. E. (1995). The Stakeholder Theory of the Corporation. *Academy of Management Review*, 20(1), 65–91.
- Driscoll, J. C. – Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549–560.
- Drobetz, W. – Pensa, P. (2007). *Capital Structure and Stock Returns: The European Evidence* (Working Paper No. 2007/18). University of Basel, Faculty of Business and Economics.
- Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *Stata Journal*, 3(2), 168–177.
- Duru, A. – Iyengar, R. J. – Zampelli, E. M. (2016). The dynamic relationship between CEO duality and firm performance: The moderating role of board independence. *Journal of Business Research*, 69(10), 4269–4277.
- Enilolobo, O. S. – Adesanmi, A. D. – Aigbe, Z. E. (2019). Corporate governance and financial performance of firms: A comparative study of food and petroleum products industries in Nigeria. *International Journal of Advancements in Research & Technology*, 8(5), 1–12.
- Export Promotion Bureau. (2022). *Annual Export Report 2022*. Government of Bangladesh.
- Fama, E. F. – Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301–325.
- Fich, E. M. – Shivdasani, A. (2006). Are busy boards effective monitors? *The Journal of Finance*, 61(2), 689–724.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Gangi, F. – D'Angelo, E. – Daniele, L. M. – Varrone, N. (2020). The impact of corporate governance on social and environmental engagement: What effect on firm performance in the food industry? *British Food Journal*, 123(2), 610–626.

- García-Martín, C. J. – Herrero, B. (2020). Do board characteristics affect environmental performance? *Corporate Social Responsibility and Environmental Management*, 27(1), 74–94.
- García-Ramos, R. – García-Olalla, M. (2011). Board characteristics and firm performance in public founder and non-founder-led family firms. *Journal of Family Business Strategy*, 2(4), 220–231.
- García-Sánchez, I. M. – Hussain, N. – Martínez-Ferrero, J. (2019). An Empirical Analysis of the Complementarities and Substitutions between Effects of CEO Ability and Corporate Governance on Socially Responsible Performance. *Journal of Cleaner Production*, 215, 1288–1300.
- Giannarakis, G. – Sariannidis, N. – Konteos, G. (2020). The effect of corporate governance characteristics on environmental performance: The case of food and beverage sector. *Open Journal of Business and Management*, 8(5), 1988–2005.
- Gujarati, D. N. – Porter, D. C. (2020). *Basic Econometrics* (6th ed.). McGraw-Hill Education.
- Habib, A. – Murtaza, S. – Hadi, M. (2022). The corporate social responsibility and the corporate financial performance by moderating role of board gender diversity. *Journal of Social Research Development*, 3(2), 128–142.
- Haque, F. – Arun, T. G. (2016). Corporate governance and financial performance: An emerging economy perspective. *Investment Management and Financial Innovations*, 13(3-1), 228–236.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251–1271.
- Heller, M. – Keoleian, G. (2003). Assessing the sustainability of the US food system: A life cycle perspective. *Agricultural Systems*, 76, 1007–1041.
- Hermalin, B. E. – Weisbach, M. S. (1991). The Effects of Board Composition and Direct Incentives on Firm Performance. *Financial Management*, 20(4), 101–112.
- Hilger, S. (2010). The relationship between corporate governance and firm performance revisited: Where do we stand? *Corporate Ownership and Control*, 7(3), 124–137.
- Hillman, A. J. – Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review*, 28(3), 383–396.

- Hillman, A. J. – Withers, M. C. – Collins, B. J. (2009). Resource dependence theory: A review. *Journal of Management*, 35(6), 1404–1427.
- Hoque, S. S. – Islam, M. S. (2023). Directors' compensation and firm performance in pharmaceuticals, chemicals and paper industry of Bangladesh. *Accounting*, 9, 233–240.
- Maniruzzaman, M. – Hossain, S. Z. (2019). Board independence and firm financial performance: Context of publicly traded manufacturing companies in Bangladesh. *European Journal of Business and Management*, 11(33), 97–105.
- Hsiao, C. (2003). *Analysis of Panel Data* (3rd ed.). Cambridge University Press.
- Hung, K.-P. – Chou, C. (2013). The impact of open innovation on firm performance: The moderating effects of internal R&D and environmental turbulence. *Technovation*, 33(10–11), 368–380.
- Ima, U. M. – Rabeta, M. – Nahar, N. – Sumi, M. S. S. (2024). Leverage-induced profitability in Bangladeshi firms: An empirical analysis. *Investment Management and Financial Innovations*, 21(1), 356–372.
- Imam, A. – Gurung, A. – Sharma, A. – Yadav, A. K. – Sah, P. (2024). Corporate Governance and Pay-For-Performance: The Impact on Earnings Management in Nepalese Commercial Banks. *Nepalese Journal of Economics*, 8(2), 89-109.
- IMF. (2021). *Bangladesh: 2021 Article IV Consultation*. International Monetary Fund.
- IPES-Food. (2024). *2024 Activity Report*. International Panel of Experts on Sustainable Food Systems.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, 48(3), 831–880.
- Jensen, M. C. – Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jia, M. – Zhen, L. – Yang, W. – Wang, S. (2023). Changing food consumption pattern and influencing factors in Bangladesh. *Foods*, 12(2), 401.
- Jiang, L. – Cherian, J. – Sial, M. S. – Wan, P., Filipe, J. A. – Mata, M. N. – Chen, X. (2021). The moderating role of CSR in board gender diversity and firm financial performance: Empirical evidence from an emerging economy. *Economic Research-Ekonomska Istraživanja*, 34(1), 2354–2373.

- Kalash, I. (2021). The financial leverage–financial performance relationship in the emerging market of Turkey: The role of financial distress risk and currency crisis. *EuroMed Journal of Business*, 18(1), 1–20.
- Kapil, S. – Mishra, R. (2019). Corporate governance and firm performance in emerging markets: Evidence from India. *Theoretical Economics Letters*, 9(6), 2033–2069.
- Kawai, M. – Prasad, E. S. (Eds.). (2011). *Financial market regulation and reforms in emerging markets*. Brookings Institution Press.
- Kaya, C. T. – Aslan, L. (2013). A research on the association between corporate governance and corporate performance in Turkish energy sector. *GSTF Journal on Business Review (GBR)*, 3(1), 1–9.
- Khalily, M. A. B. – Uddin, M. J. – Ullah, M. S. – Tareq, M. (2020). *Development of SMEs in Bangladesh: Lessons from the German Experience*. Friedrich-Ebert-Stiftung (FES) Bangladesh.
- Kirca, A. H. – Hult, G. T. M. – Roth, K. – Cavusgil, S. T. – Perry, M. Z. – Akdeniz, M. B. – Deligonul, S. Z. – Mena, J. A. – Pollitte, W. A. – Hoppner, J. J. – Miller, J. C. – White, R. C. (2011). Firm-specific assets, multinationality, and financial performance: A meta-analytic review and theoretical integration. *Academy of Management Journal*, 54(1), 47–72.
- Kumar, Praveen – Zattoni, Alessandro. (2014). Corporate Governance, Board of Directors, and the Firm: A Maturing Field. *Corporate Governance: An International Review*. 22.
- Kumari, J. S. (2023). Moderating effect of board independence on the determinants of financial performance in listed non-financial companies of Colombo Stock Exchange. *Sri Lankan Journal of Banking and Finance*, 6(2), 19–38.
- Mardnly, Z. – Mouselli, S. – Abdulraouf, R. (2018). Corporate governance and firm performance: An empirical evidence from Syria. *International Journal of Islamic and Middle Eastern Finance and Management*, 11(4), 591–607.
- Ministry of Food Processing Industries. (2021). *Annual Review of Food Sector*. Government of Bangladesh.
- Ministry of Industries. (2023). *Annual Report on the Food and Allied Sector*. Government of Bangladesh.
- Ministry of Industries. (2021). *Industrial Census - Highlights of Findings, 2019–2020*.
- Nestlé Bangladesh Ltd. (2023). *Sustainability and Operations Report 2023*. Nestlé Bangladesh.

- Ngo, M. T. – Le, T. N. – Nguyen, N. T. – Luu, T. T. T. (2023). Board independence and financial performance: Empirical evidence on mediating role of market competition from the Vietnamese market. *International Journal of Professional Business Review*, 8(5), e01498.
- OECD. (2023). *G20/OECD Principles of Corporate Governance*. OECD Publishing.
- Paniagua, J. – Rivelles, R. – Sapena, J. (2018). Corporate governance and financial performance: The role of ownership and board structure. *Journal of Business Research*, 89, 229–234.
- Ooko, J. (2024). Ownership structure, agency costs, board independence and corporate risk among firms listed at the Nairobi Securities Exchange, Kenya. *Asian Journal of Economics, Business and Accounting*, 24(12), 50–64.
- Papangkorn, S. – Chatjuthamard, P. – Jiraporn, P. – Phiromswad, P. (2020). Do analysts' recommendations reflect co-opted boards? *Corporate Governance: The International Journal of Business in Society*, 20(6), 1091–1103.
- Pervan, M. – Pervan, I. – Ćurak, M. (2017). The influence of age on firm performance: Evidence from the Croatian food industry. *Journal of Eastern Europe Research in Business and Economics*, 2017, Article ID 618681.
- Planning Commission. (2022). *Perspective Plan of Bangladesh 2021–2041*. Government of Bangladesh.
- Pfeffer, J. – Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Puffer, S. M. – McCarthy, D. J. – Jaeger, A. M. (2016). Institution building and institutional voids. *International Journal of Emerging Markets*, 11(1), 18–41.
- Rahman, M. T. – Uddin, M. S. (2020). Institutional environment and firm performance: Evidence from Bangladesh. *Journal of Institutional Economics*, 16(6), 907–929.
- Rashid, A. (2018). Board independence and firm performance: Evidence from Bangladesh. *Future Business Journal*, 4(1), 34–49.
- Rashid, M. H. U. – Hossain, S. Z. (2022). Does board independence moderate the effect of politician directors on CSR disclosure: Evidence from the publicly listed banks in Bangladesh. *Social Responsibility Journal*, 18(5), 935–950.
- S. Alam Group. (2024). *Corporate Profile and Strategic Vision*. S. Alam Group Publications.

- Safiullah, M. – Akhter, T. – Saona, P. – Azad, M. A. K. (2022). Gender diversity on corporate boards, firm performance, and risk-taking: New evidence from Spain. *Journal of Behavioral and Experimental Finance*, 35, 100721.
- Sarker, N. – Hossain, S. M. K. (2023). Corporate governance and firm value: Bangladeshi manufacturing industry perspective. *PSU Research Review*, 8(3), 872–897.
- Saunders, M. – Lewis, P. – Thornhill, A. (2019). *Research Methods for Business Students* (8th ed.). Pearson Education.
- Securities and Exchange Commission Bangladesh. (2006). *Guidelines for Director Independence*.
- Securities and Exchange Commission Bangladesh. (2018). *Amendment of Public Issue Rules, 2015*.
- Tien, N. T. T. (2020). Towards a multi-theoretical approach on the board and firm performance relationship. *VNU Journal of Economics and Business*, 36(2).
- Tricker, R. I. (2015). Corporate governance: Principles, policies, and practices. *Oxford University Press*.
- Unilever Bangladesh Ltd. (2023). Annual Report 2023. *Unilever Bangladesh*.
- Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of Financial Economics*, 53(1), 113–142.
- Wang, Y. – Young, A. (2010). Does firm performance affect board independence? *Corporate Board: Role, Duties & Composition*, 6(2), 6–19.
- Welch, I. (2004). Capital structure and stock returns. *Journal of Political Economy*, 112(1), 106–131.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4), 817–838.
- Wilcox, R. R. (2017). *Introduction to Robust Estimation and Hypothesis Testing* (4th ed.). Academic Press.
- Wintoki, M. B. – Linck, J. S. – Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), 581–606.
- Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd ed.). MIT Press.
- World Bank. (2023). *Bangladesh Development Update April 2023*. Washington, DC: World Bank.

World Bank. (2023). *Bangladesh Overview*.

Yassin, M. Z. (2021). Investigating the effects of board and firm characteristics on firm performance: An agency theory perspective. *Scientific Journal for Financial and Commercial Studies and Researches*, 2(1), 228–264.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185–211.

Young, B. (2003). Corporate governance and firm performance: Is there a relationship? *Ivey Business Journal*, September/October.

Young, M. N. – Peng, M. W. – Ahlstrom, D., Bruton, G. D. – Jiang, Y. (2008). Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management Studies*, 45(1), 196–220.

Zraiq, M. A. A. – Fadzil, F. H. B. (2018). The impact of audit committee characteristics on firm performance: Evidence from Jordan. *Scholar Journal of Applied Sciences and Research*, 1(5), 39–42.

Appendices

Appendix 1 List of sampled food and allied companies

- Agricultural Marketing Company Ltd. (Pran)
- Apex Foods Ltd.
- Bangas Ltd.
- BD Thai Food & Beverageⁱ
- Beach Hatchery Ltd.
- British American Tobacco Bangladesh Company Ltd.
- Emerald Oil
- Fine Foods Ltd.
- Fu Wang Food Ltd.
- Gemini Sea Food Ltd.
- Golden Harvest Agro Industries Ltd.
- Meghna Condensed Milk Industries Ltd.ⁱⁱ
- Meghna Pet Industries Ltd.ⁱⁱⁱ
- National Tea Company Ltd.
- Olympic Industries Ltd.
- Rahima Food Corporation Ltd.
- Rangpur Dairy & Food Products Ltd.
- Taufika Foods and Lovello Ice Cream Ltd.^{iv}
- Shyampur Sugar Mills Ltd.
- Unilever Consumer Care Ltd.
- Zeal Bangla Sugar Mills Ltd.

Source: Dhaka Stock Exchange & Chittagong Stock Exchange

ⁱ Firm included in the regression sample but contributes only partial-year data due to listing after 2017 (resulting in unbalanced panel structure)

ⁱⁱ excluded from regression analysis due to missing governance data

ⁱⁱⁱ excluded from regression analysis due to missing governance data

^{iv} Firm included in the regression sample but contributes only partial-year data due to listing after 2017 (resulting in unbalanced panel structure)

Appendix 2 Descriptive Statistics for Key Variables

	count	mean	std.	min	25%	50%	75%	max
BEP	121	-0.36785	2.46963	-25.7531	-0.03917	0.010052	0.050541	2.287926
IDR	112	0.272497	0.149327	0	0.2	0.236111	0.333333	0.833333
Board Size	112	6.660714	1.905675	4	5	6	8	12
No. of Board Meeting	112	9.178571	6.830264	0	6	8	10	44
Board Attendance	112	0.800185	0.204719	0	0.740525	0.85	0.932375	1
Total Assets	121	4.77E+09	1.43E+10	137052	2.33E+08	5.38E+08	1.88E+09	8.34E+10
Sales	121	4.56E+09	1.43E+10	0	2184387	2.68E+08	1.07E+09	8.42E+10
Firm Age	121	31.78512	15.46135	3	20	32	41	73
TAT	121	8.037578	77.44779	0	0.028661	0.447231	0.94488	852.5811
ROA	121	-0.27795	1.355833	-13.3755	-0.06916	0.007848	0.041674	0.655361
ROE	121	0.772764	9.795308	-45.9113	0.010827	0.07172	0.200874	95.74531

Appendix 3 Correlation Matrix

	BEP	IDR	Board Size	No. of Board Meeting	Board Attendance	Total Assets	Sales	Firm Age	TAT	ROA	ROE
BEP	1										
IDR	-0.00759	1									
Board Size	0.009573	0.086016	1								
No. of Board Meeting	0.108161	0.199951	0.109901	1							
Board Attendance	0.00374	0.227626	0.003093	-0.16219	1						
Total Assets	0.086818	-0.0752	0.469571	0.112786	0.028583	1					
Sales	0.091515	-0.0544	0.463072	0.177147	-0.01277	0.989319	1				
Firm Age	-0.05465	-0.14117	0.421984	0.121108	0.13786	0.276757	0.300206	1			
TAT	-0.94227	0.039117	-0.0318	-0.00856	0.043685	-0.03079	-0.02659	0.029049	1		
ROA	0.462726	0.040114	-0.094	0.117389	0.090646	0.101277	0.101033	-0.13674	-0.18307	1	
ROE	-0.00446	-0.02381	-0.0435	-0.02785	0.03789	-0.01649	-0.00235	-0.01785	0.008984	0.004323	1

Appendix 4 FE Model with ROA as the Dependent Variable

Variable	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0028	0.0074	-0.38	0.705	-0.0172	0.0116
Board Size	0.0152	0.0087	1.75	0.081	-0.0015	0.0319
No. of Board Meetings	0.0683	0.0256	2.67	0.008	0.0183	0.1183
Firm Size (Total Assets)	0.0394	0.0129	3.05	0.002	0.0142	0.0646
Firm Age	-0.0115	0.0071	-1.62	0.105	-0.0253	0.0023
TAT	-0.7452	0.1053	-7.08	0	-0.9515	-0.5389
Constant	1.3127	0.5218	2.52	0.012	0.2892	2.3362

Appendix 5 FE Model with ROE as the Dependent Variable

Variable	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					Lower	Upper
Independent Director Ratio (IDR)	-0.0034	0.0081	-0.42	0.673	-0.0192	0.0124
Board Size	0.0167	0.0093	1.8	0.074	-0.0015	0.0349
No. of Board Meetings	0.0732	0.0284	2.58	0.01	0.0174	0.129
Firm Size (Total Assets)	0.0421	0.0137	3.08	0.002	0.0152	0.069
Firm Age	-0.0128	0.0076	-1.68	0.093	-0.0276	0.002
TAT	-0.7883	0.1135	-6.95	0	-1.01	-0.5666
Constant	1.4519	0.5536	2.62	0.009	0.3661	2.5377

Appendix 6 Illustrative Examples of AI-Assisted Conceptual Support

Prompt:

Can you help outline a literature review on board independence and firm performance with a focus on emerging economies?

AI Response (Excerpt):

Sure, here's a suggested structure:

- Introduction – Purpose and significance of board independence
- Theoretical foundations – Agency Theory, Stakeholders Theory, and RDT
- Empirical studies – Developed vs. emerging market
- Sector-specific considerations – Regulated industries (e.g., food sector)
- Identified research gaps
- Conceptual framework and hypothesis development

Prompt:

What makes BEP a more appropriate dependent variable than ROA or ROE in emerging market governance studies?

AI Response (Excerpt):

BEP is leverage-neutral, capturing core operational performance without distortion from capital structure or tax effects. In emerging markets, where financial reporting may be inconsistent and capital access varies widely, BEP offers more stable cross-firm comparability. It is particularly relevant when firm efficiency is of interest in resource-constrained settings.

Prompt:

My dependent variable is Basic Earning Power (BEP), and my dataset includes firms of very different sizes. What are the possible techniques to address firm size variation in this context?

AI Response (Excerpt):

To handle variation in firm size, especially when using BEP, normalization techniques are often applied. You may consider:

- Log-transforming BEP to reduce skewness
- Using size-adjusted performance measures
- Including firm size as a control variable

- Applying fixed effects to account for time-invariant heterogeneity
- Winsorizing extreme values if outliers are present

The choice depends on the model structure and data distribution.

Prompt:

Which estimation method is more suitable for panel data: OLS, PLS, FE, or RE?

AI Response (Excerpt):

For panel data, Ordinary Least Squares (OLS) may not be appropriate due to unobserved heterogeneity.

- Fixed Effects (FE) is suitable when firm-specific traits may correlate with independent variables.
- Random Effects (RE) is efficient when those traits are uncorrelated.
- Use the Hausman test to decide between FE and RE.

Partial Least Squares (PLS) is less commonly used in panel regressions; it's more suited to cases with multicollinearity in small samples. FE or RE models are generally preferred.

Prompt:

What are the differences between OLS, FE, and RE models for panel data? Which one is most appropriate?

AI Response (Excerpt):

OLS does not account for within-entity heterogeneity, making it unsuitable for panel data. Fixed Effects (FE) controls for time-invariant firm characteristics, making it ideal when unobserved firm traits may correlate with predictors. Random Effects (RE) assumes no such correlation. Use the Hausman test to decide between the two.

Prompt:

What are some plausible reasons for insignificant results in corporate governance studies?

AI Response (Excerpt):

- Common reasons include:
 - Weak enforcement of governance codes
 - Symbolic board appointments
 - Measurement errors in governance variables
 - Omitted variable bias
 - Contextual misfit of theoretical models

Prompt:

If independent director ratio has no significant impact, but board size and meeting frequency are significant, how should I interpret that?

AI Response (Excerpt):

This suggests that formal independence alone is insufficient. Structural engagement—through size and meeting frequency—may drive governance effectiveness in contexts where independent directors lack authority or sector expertise. This aligns more with Resource Dependence Theory than with strict Agency assumptions.

Prompt:

What are standard robustness tests used in panel data regression analysis?

AI Response (Excerpt):

Common robustness checks for panel data include:

- Multicollinearity test (e.g., Variance Inflation Factor)
- Heteroskedasticity test (e.g., Breusch-Pagan or White test)
- Autocorrelation test (e.g., Wooldridge test)
- Stationarity test (e.g., Levin-Lin-Chu or Im-Pesaran-Shin)
- Alternative model specifications (e.g., using different estimation techniques)

These help validate model assumptions and ensure result stability.

Prompt:

What kind of summary should be written at the end of the thesis if there is already a conclusion chapter?

AI Response (Excerpt):

The summary should be concise and self-contained. It should revisit the research purpose, highlight the methodology, summarize key findings, state theoretical and practical contributions, and briefly note limitations and future directions. Avoid repeating the detailed analysis already covered in the conclusion.