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Board diversity and earnings management: Moderating role of financial constraints in Nigeria listed food and beverages companies

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Abstract

This study examined the moderating role of financial constraints on the effect of board diversity on real earnings management among listed Food and Beverages Companies in Nigeria. Specifically, it aimed to ascertain the moderating effect of short-term liquidity constraints on the relationship between board independence, board size, and board gender diversity and real earnings management. The study adopted an ex-post facto research design, with a population of sixteen (16) listed Food and Beverages firms, from which twelve (12) were purposively selected. Secondary data were collected from the annual reports of the firms over a ten-year period that spanned 2015–2024. Data were collected from the annual reports and financial statements of the sampled firms and analyzed using the Fixed Effect Model (FEM) regression technique to test the formulated hypotheses at 5% significance level. The findings revealed that: short-term liquidity constraints positively moderate the effect of board independence on real earnings management ($\beta = 8.20, p = 0.0001$) at 5% significance level; short-term liquidity constraints negatively moderate the effect of board size on real earnings management ($\beta = -0.29, p = 0.0006$) at 5% significance level; short-term liquidity constraints negatively moderate the effect of board gender diversity on real earnings management ($\beta = -9.89, p = 0.0000$) at 5% significance level. The study concluded that financial constraints play a critical role in shaping how board characteristics influence earnings management practices, emphasizing the need for improved liquidity management and board composition to enhance financial transparency in Nigeria's food and beverages sector. It was recommended that regulators and company shareholders should ensure that independent directors receive specialized training on financial distress indicators and ethical financial reporting. This will

help them better recognize and resist pressures to engage in earnings manipulation during times of financial difficulty, thereby improving oversight effectiveness.

Keywords: Board Diversity, Earnings Management, Financial Constraints.

INTRODUCTION

In the modern corporate domain, governance structures have become an essential focus for regulators, investors, and scholars alike. Boards of directors play a critical role in overseeing management decisions and ensuring that organizations operate transparently and responsibly (Nwafor & Nworie, 2025). As firms strive to enhance their credibility and performance, the composition of their boards has come under increasing scrutiny. The issue of earnings management, where companies manipulate financial reports to present a desired picture of their financial health, remains a challenge worldwide (Ibe et al., 2025). This practice undermines the reliability of financial statements and can mislead investors, creditors, and other stakeholders. Within this broader framework, the study of how board characteristics influence earnings management is vital. Real earnings management, in particular, which involves altering operational activities to achieve financial targets, has attracted growing attention as it may be harder to detect compared to accrual-based earnings management (Musa et al., 2024). In Nigeria, a developing economy with emerging capital markets, the dynamics of board structures and financial reporting practices present a unique context. Companies listed on the Nigerian Exchange Group, especially in critical sectors such as food and beverages, must navigate complex regulatory, economic, and social factors.

The importance of board diversity has gained considerable recognition in today's business environment. Diversity in board composition includes dimensions such as gender, independence, expertise, and size (Khan et al., 2024). Organizations increasingly acknowledge that a varied board can bring a broader range of perspectives, experiences, and skills, which contributes to more balanced decision-making (Daniel et al., 2024). This is especially relevant as businesses face growing demands for accountability and ethical conduct. Gender diversity, for instance, has been linked to better oversight and risk management, while independent directors are expected to provide unbiased judgments that safeguard shareholder interests (Attia et al., 2024; Daddau & Bala, 2024). Similarly, an optimal board size ensures sufficient capacity for thorough deliberations without creating inefficiencies (Kamarudin et al., 2025). In Nigeria, efforts to promote diversity have been partly driven by regulatory frameworks and global corporate governance trends. However, challenges persist, including cultural attitudes and practical constraints that may limit the full realization of diversity benefits. As firms contend with these issues, the relevance of effective board diversity goes beyond regulatory compliance; it becomes a strategic imperative that can influence organizational resilience, reputation, and financial performance.

Board diversity's effect on earnings management is a subject of extensive research and debate. Diverse boards are believed to reduce the likelihood of earnings manipulation by enhancing monitoring functions and fostering transparency (Daniel et al., 2024). For example, female directors are often associated with higher ethical standards and greater reluctance to engage in aggressive financial reporting. Independent directors are expected to challenge management decisions that may distort financial information (Ibe et al., 2025). However, the relationship is complex and may depend on other factors such as financial constraints faced by firms. Financial constraints, especially short-term liquidity pressures, can influence how boards operate and the incentives for earnings management. Firms experiencing tight financial conditions may be more tempted to engage in earnings management to meet debt covenants, attract investors, or secure credit (Duong et al., 2025). In such cases, the effectiveness of board diversity in curbing these practices might be weakened or strengthened depending on the firm's financial health. The moderating role of financial constraints highlights that

governance mechanisms do not operate in isolation but interact with economic realities. This dynamic is particularly significant in emerging markets like Nigeria, where companies frequently face liquidity challenges amid volatile economic conditions.

A well-functioning board of directors is crucial for ensuring transparency and accountability in corporate financial reporting. When boards are diverse, with members bringing different experiences, backgrounds, and perspectives, they are better equipped to oversee management activities effectively (Musa et al., 2024). Such diversity in composition, including factors like board size, independence, and gender representation, supports thorough monitoring of financial practices and helps prevent manipulation of earnings. Furthermore, a strong governance framework encourages companies to report their financial results honestly, enabling stakeholders to make informed decisions. Financial stability also plays a role in this environment, as firms with sufficient resources are more likely to maintain ethical reporting standards without resorting to earnings manipulation (Duong et al., 2025). In this setting, board diversity and financial strength together contribute to reducing practices that distort financial statements.

In reality, many companies, especially in emerging markets like Nigeria, face challenges that complicate this governance picture. Boards appear to lack adequate diversity, with limited female representation, fewer independent directors, and inconsistencies in board size that may hinder effective oversight. At the same time, many firms experience financial constraints that put pressure on management to present more favorable financial outcomes, sometimes leading to real earnings management (Ado et al., 2020). This situation is particularly evident in the food and beverages sector, where firms must navigate fluctuating market conditions and tight liquidity. The presence of financial constraints can affect how boards function, weakening their ability to check management's opportunistic behavior. As a result, the mechanisms meant to ensure honest reporting may not work as intended, and earnings manipulation remains a persistent issue despite governance reforms.

The consequences of these challenges are far-reaching. When boards are unable to provide strong oversight due to lack of diversity or the influence of financial difficulties, the reliability of financial reports comes into question. Investors and creditors may lose confidence in the accuracy of reported earnings, which can lead to reduced investment and higher costs of capital for firms (Eissa et al., 2025). Inaccurate financial statements also hinder the efficient allocation of resources within the economy and may contribute to market instability. For the companies themselves, engaging in earnings management can result in legal penalties, damage to reputation, and long-term harm to sustainability. Although several studies have examined the relationship between board diversity and earnings management, there is limited understanding of how financial constraints influence this relationship in Nigerian listed food and beverages companies. Prior works by Ibe et al. (2025) and Daniel et al. (2024) investigated board independence and composition in relation to earnings management but did not include financial constraints as a moderating factor. Similarly, Hasan et al. (2025) and Timta et al. (2024) examined board size and gender diversity without considering liquidity challenges. Musa et al. (2024) and Godo et al. (2024) analyzed board attributes and real earnings management but overlooked the role of short-term financial pressures. Evidence from Attia et al. (2024) on Egyptian firms also emphasized gender diversity's effect on reducing manipulation, yet financial constraints were not explored. Thus, as Okafor et al. (2024) and Daddau and Bala (2024) note, there remains a research gap on how liquidity conditions shape board effectiveness in curbing earnings management, particularly in Nigeria's food and beverages sector.

Objective of the Study

The main aim of the study is to examine the moderating role of financial constraints on the effect of board diversity on real earnings management among listed food and beverages companies in Nigeria. The specific research objectives are:

1. To ascertain the moderating effect of short-term liquidity constraints on the effect of board independence on real earnings management among listed food and beverages companies in Nigeria.
2. To determine the moderating effect of short-term liquidity constraints on the effect of board size on real earnings management among listed food and beverages companies in Nigeria.
3. To analyze the moderating effect of short-term liquidity constraints on the effect of board gender diversity on real earnings management among listed food and beverages companies in Nigeria.

Hypotheses

H₀₁: Short-term liquidity constraints do not significantly moderate effect of board independence on real earnings management among listed food and beverages companies in Nigeria.

H₀₂: Short-term liquidity constraints do not significantly moderate the effect of board size on real earnings management among listed food and beverages companies in Nigeria.

H₀₃: Short-term liquidity constraints do not significantly moderate the effect of board gender diversity on real earnings management among listed food and beverages companies in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Board Diversity

Board diversity refers to the presence of different attributes, characteristics, and backgrounds among members who serve on a company's board of directors (Khan et al., 2024). It encompasses variations in race, ethnicity, age, professional experience, educational background, and even cultural perspectives. Diversity within a board reflects a range of viewpoints that shape how decisions are approached and evaluated. When a board has diverse members, it is often more capable of understanding and responding to the needs of a broad array of stakeholders (Hasan et al., 2025). This diversity brings richness in thinking that can improve the quality of oversight, challenge groupthink, and foster innovation in governance practices.

The idea behind having a diverse board is grounded in the belief that a variety of life experiences and professional insights can contribute to better decision-making and corporate success (Musa et al., 2024). Daniel et al. (2024) argued that different members bring unique lenses through which company issues are seen, which helps in identifying risks and opportunities that might otherwise be overlooked. A board with varied perspectives tends to approach challenges with creativity and caution, balancing aggressive growth strategies with prudent risk management (Nwafor & Nworie, 2025). Beyond functional benefits, diversity also reflects social progress and corporate responsibility, as companies recognize the importance of representing the populations they serve. The blend of voices in a boardroom also influences company culture and policies, shaping an environment that values inclusion and fairness (Jukanovich & West, 2024). Through this, board diversity not only improves business outcomes but also enhances the company's reputation and stakeholder trust.

Board Independence

Board independence refers to the degree to which directors serving on a company's board are free from influences that could compromise their objectivity and judgment (Ibe et al., 2025). Independent directors are those who do not have significant ties to the company beyond their

board role. This means they are not employees, major shareholders, or involved in relationships that could sway their decisions in favor of management or other parties. The presence of independent directors is meant to safeguard the interests of shareholders and stakeholders by ensuring that board decisions are made impartially, without conflicts of interest (Nwafor & Nworie, 2025).

The importance of independence lies in the ability of these directors to provide unbiased oversight of management performance, financial reporting, and strategic direction (Daddau & Bala, 2024). Independent members serve as a check on executive power, helping to prevent self-serving behaviors that can harm the company's reputation and financial health. They are tasked with scrutinizing management proposals and holding leaders accountable to transparent governance standards. Independence also fosters trust among investors and regulators, signaling that the company is committed to fairness and ethical conduct. While independent directors may not be involved in day-to-day operations, their role in governance is vital in balancing competing interests, ensuring compliance, and promoting long-term sustainability. Their detachment from operational ties allows for critical evaluation and honest challenge in board discussions.

Board Size

Board size relates to the number of individuals serving as directors on a company's governing body (Hasan et al., 2025). It is a critical structural characteristic that influences how a board functions. Boards can vary widely in size, from a handful of directors to several dozen, depending on the company's needs, industry, and governance philosophy. The size of the board affects communication, coordination, and the ability to make timely and effective decisions. A smaller board often allows for quicker discussion and more efficient decision-making due to fewer voices and less need for extended deliberation. In contrast, a larger board may provide more diverse perspectives and specialized knowledge but might struggle with coordination and consensus building (Nwafor & Nworie, 2025).

Choosing the right number of board members requires balancing the need for expertise, independence, and diversity with the practicality of effective management. Too few directors might lead to an overconcentration of power and limited viewpoints, which can affect oversight quality. Conversely, an overly large board may become cumbersome and slow to respond to emerging challenges, diminishing its effectiveness (Kamarudin et al., 2025). The interaction among board members, shaped by the board's size, influences the dynamics of trust, accountability, and collective responsibility. The size also impacts committee structures, as many boards delegate specific tasks to smaller groups within the larger board. Ultimately, the number of directors shapes how governance is carried out, affecting a company's ability to steer through complex strategic environments and regulatory demands.

Board Gender Diversity

Board gender diversity involves the representation of different genders, primarily focusing on the inclusion of women alongside men, within a company's board of directors (Nwafor & Nworie, 2025). Gender diversity goes beyond numbers, representing a commitment to equality and fairness in leadership roles traditionally dominated by one gender (Timta et al., 2024). Having women on boards introduces different experiences, leadership styles, and approaches to problem-solving, which can enrich board deliberations. Gender diversity is also viewed as a reflection of societal values and the progress made toward eliminating barriers to female participation in corporate governance.

Including women on boards can influence the nature of discussions and decision-making processes, often leading to broader perspectives on social responsibility, human capital management, and stakeholder engagement (Musa et al., 2024). It challenges the homogeneity that might limit innovation or reinforce entrenched practices. Gender-diverse boards are increasingly recognized as better equipped to respond to changing market demands and

diverse customer bases (Nwafor & Nworie, 2025). This inclusion promotes a culture of equality within the broader organization, signaling that opportunities for leadership are open to all qualified individuals regardless of gender. Gender diversity is not only a social imperative but also linked to improved organizational performance, as it encourages a more balanced and holistic view in governance. Through their presence, women contribute to shaping policies and strategies that address wider societal concerns, fostering sustainable growth and resilience (Daniel et al., 2024).

Earnings Management

Earnings management refers to the deliberate shaping or adjustment of financial reports by company management to influence how the company's performance appears to external observers (Ibe et al., 2025). It is an activity where managers manipulate accounting practices, within the boundaries of regulations, to achieve desired financial outcomes (Daniel et al., 2024). This can include timing transactions, adjusting reserves, or selectively applying accounting policies to smooth earnings or meet targets. The objective often revolves around presenting the company's financial health in a more favorable light to stakeholders such as investors, creditors, or regulators. Although these actions can remain within legal limits, they raise ethical concerns about transparency and reliability. This practice is often motivated by pressures on management to meet earnings forecasts, secure bonuses, attract investment, or maintain stock prices. Earnings management reflects the tension between truthful financial reporting and the strategic presentation of information to influence perceptions (Daddau & Bala, 2024). It can sometimes be a tool to mask underlying business difficulties or to artificially boost performance during periods of weak results. However, earnings management carries risks, as it may distort the true economic condition of the firm and mislead those relying on financial statements. It also challenges the integrity of corporate governance and audit functions, creating a gap between reported and actual performance. The way earnings are managed varies from subtle accounting choices to more aggressive approaches that may border on fraudulent behavior.

The practice of earnings management occupies a complex space between permissible judgment in accounting and deliberate misrepresentation. It highlights the discretion available to management in interpreting financial rules and how such discretion can be used to shape reported outcomes (Ibe et al., 2025). This manipulation can affect the confidence of stakeholders in the firm's financial communication and complicate investment and lending decisions. Although earnings management might sometimes be used to signal future prospects or stabilize reported profits, it often blurs the line between honest reporting and opportunistic behavior, making it a subject of ongoing scrutiny and regulatory concern (Daddau & Bala, 2024).

Real Earnings Management

Real earnings management involves actions taken by managers to influence reported earnings through operational decisions and activities rather than through accounting techniques alone (Musa et al., 2024). Instead of merely adjusting accounting entries, real earnings management entails altering actual business transactions such as sales, production, or expenses (Godo et al., 2024). For example, management might accelerate sales at the end of a reporting period, delay necessary expenditures, or change production levels to affect costs and reported profits. These activities can directly impact the company's cash flows, resources, and long-term performance. It reflects the tangible efforts made to meet financial targets by manipulating real business outcomes. This approach to earnings management can be more difficult to detect than purely accounting-based manipulation because it involves genuine changes in business operations (Attia et al., 2024). While it may improve short-term reported earnings, real earnings management can undermine the company's efficiency and sustainability over time. The choices made to manage earnings through real activities often have immediate financial

effects and may come at the cost of higher operational risks or reduced future earnings. These decisions reveal the pressure on management to meet market expectations, sometimes at the expense of the company's long-term health.

Unlike earnings management that relies solely on accounting discretion, real earnings management leaves footprints in operational data, such as abnormal cash flows or production volumes (Okafor et al., 2024). It highlights how financial reporting can be influenced by choices made in the day-to-day running of the business. By engaging in real earnings management, firms might prioritize short-term financial appearance over prudent management, which can mislead stakeholders about the true economic performance (Godo et al., 2024). This form of earnings management illustrates how the boundaries of reporting extend beyond numbers on paper to encompass the strategic conduct of business activities themselves.

Financial Constraint

Financial constraint occurs when a company faces limitations in accessing sufficient external capital to finance its investment projects or operational needs (Abdeljawad et al., 2024). It reflects the restrictions on obtaining funds from outside sources such as banks, equity markets, or other lenders. When financial resources are scarce, firms struggle to finance growth opportunities or maintain smooth operations (Gong et al., 2025). This situation arises due to factors like poor credit ratings, lack of collateral, unfavorable market conditions, or weak financial performance. A financially constrained company often must rely heavily on internal funds, which may not be adequate to meet its needs (Santos & Cincera, 2022). This limitation on financing has important consequences for a company's strategic choices and operational flexibility. Firms under financial constraint may delay or reduce investments, cut costs aggressively, or prioritize short-term survival over long-term development. The pressure to conserve cash can affect decisions about product development, market expansion, or acquisitions.

The presence of financial constraint influences corporate governance and risk-taking behavior. It can limit a company's ability to respond to competitive challenges or pursue innovation, potentially harming future profitability. Such constraints highlight the vulnerability of firms in certain environments and how external financial conditions shape internal decision-making (Santos & Cincera, 2022). Firms facing financial constraints must carefully manage cash flows, credit lines, and investment priorities to navigate the pressures of limited funding. This situation underscores the challenges many businesses face in sustaining growth and stability when financial resources are not readily available.

Short-term Liquidity Constraints

Short-term liquidity constraints refer to situations where a company does not have enough readily available cash or liquid assets to meet its immediate financial obligations, such as paying suppliers, employees, or short-term debts (Nicolas, 2022). This type of constraint is a subset of broader financial challenges and focuses specifically on the company's ability to cover its obligations as they come due within a short time frame. The inability to maintain sufficient liquidity can arise from poor cash flow management, unexpected expenses, or timing mismatches between inflows and outflows of cash (Ofulue et al., 2025). When liquidity is tight, firms face pressure to prioritize payments or seek emergency funding. Liquidity constraints limit operational flexibility and can cause disruptions in daily business activities (Gutta, 2025). For example, a firm may delay supplier payments or reduce inventory purchases, which in turn may affect production or service delivery. These short-term pressures create a cycle where firms struggle to maintain normal operations and risk damaging relationships with stakeholders. Liquidity challenges also create stress on management, requiring careful cash planning and contingency strategies to avoid insolvency or default

(Gunawan, 2023). Such constraints highlight the delicate balance companies must maintain to operate smoothly without jeopardizing financial stability.

Short-term liquidity issues often reflect broader economic or industry conditions, where external shocks or downturns reduce cash inflows or increase unexpected demands for cash (Nicolas, 2022). They emphasize the importance of managing working capital effectively and maintaining reserves or credit lines to cover urgent needs. The presence of short-term liquidity constraints signals vulnerability in a company's financial health and underscores the critical role of cash management in sustaining business operations (Braun & Raddatz, 2016). These constraints may compel firms to take actions that prioritize immediate survival, sometimes at the expense of longer-term goals.

Theoretical Framework

Agency Theory was first introduced by Michael C. Jensen and William H. Meckling in 1976 (Gwala & Mashau, 2023). It emerged as a way to explain the relationship between principals, typically shareholders, and agents, who are the managers appointed to run the company on behalf of the shareholders. The theory came about as a result of recognizing that the goals of owners and managers might not always align, leading to conflicts of interest. Jensen and Meckling's work laid the foundation for understanding how mechanisms, such as contracts and monitoring systems, could be put in place to ensure that agents act in the best interest of the principals. Over time, this theory has become a cornerstone in corporate governance literature, especially in studies related to monitoring management behavior and reducing opportunism (Al-Faryan, 2024).

Agency Theory suggests that there is an inherent conflict because the agent (manager) may pursue personal goals that differ from the goals of the principal (shareholder) (Hindasah & Harsono, 2021). This divergence creates what is called agency problems, where managers might engage in self-serving behaviors, such as manipulating earnings or making decisions that benefit themselves rather than shareholders. The theory argues that effective governance structures, like independent boards and oversight committees, can help align these interests by monitoring and controlling managerial actions. Furthermore, it proposes that incentives and contracts should be designed in a way that encourages managers to act in the company's best interest. Transparency, accountability, and proper checks are essential components in reducing the risk of managers exploiting their position.

Agency Theory is highly relevant to the study of board diversity and real earnings management, especially when financial constraints come into play. The theory underscores the importance of governance mechanisms in ensuring that managers do not take advantage of information asymmetry to engage in earnings manipulation. A diverse board can serve as a stronger monitoring body, bringing a range of perspectives and expertise that can better check managerial behavior. Additionally, when companies face financial constraints, the pressure on management to meet financial targets may increase, raising the risk of earnings management. Agency Theory provides a useful lens for understanding how board characteristics, including diversity, can help reduce these agency problems by imposing discipline on managers, thereby improving the quality of financial reporting and protecting shareholders' interests.

Empirical Review

Ibe et al. (2025) explore how board independence influences earnings management in listed deposit money banks in Nigeria, with audit committee expertise acting as a moderating factor. The population includes 14 listed deposit money banks as of December 31, 2023, with a purposive sample of 10 banks chosen based on data availability. The study employs a quantitative approach using secondary data from annual reports spanning 2014 to 2023. The data were analyzed using Moderated Multiple Regression (MMR) in STATA version 12. Findings indicate that board independence positively and significantly affects earnings management, while audit committee expertise negatively moderates this relationship.

Hasan et al. (2025) investigate the impact of various board characteristics—such as board size, frequency of board meetings, board independence, and gender diversity—on earnings management. The study examines 35 firms listed on the Iraq Stock Exchange over the period 2010 to 2021. Results reveal that the number of board meetings significantly influences earnings management, whereas board size, board independence, and gender diversity show no significant effect.

Timta et al. (2024) assess the relationship between board gender diversity and earnings quality in Nigerian listed consumer goods firms. Using annual reports from 15 firms listed on the Nigerian Exchange Group between 2010 and 2022, the study applies multivariate regression analysis. The results indicate that board gender diversity has a negative but statistically insignificant impact on earnings quality. The study recommends thorough evaluation of corporate governance frameworks and suggests firms with diverse ownership structures should ensure their boards adequately represent key stakeholder interests, despite the lack of consensus on optimal board size.

Musa et al. (2024) examine how the composition of the board of directors (including size, expertise, meeting frequency, and gender diversity), risk management committee characteristics (size, expertise, meetings, overlapping memberships), CEO power (tenure, education, expertise, ownership, and networks), audit committee attributes (size, expertise, tenure, multiple directorships), and monitoring costs (internal audit function, audit costs, non-executive directors' costs) affect real earnings management (REM) in Nigerian listed non-financial firms. Data covers periods before (2016–2018) and after (2019–2021) implementation of the revised Nigerian Code of Corporate Governance. Hypotheses were tested using Driscoll and Kraay standard errors. Results suggest that board size, expertise, and effectiveness significantly reduce REM. Similarly, risk management committee factors and their effectiveness correlate with lower REM. CEO power aspects such as tenure, expertise, ownership, and networks negatively influence REM, while CEO education and audit committee size have a positive association with REM. Internal audit and audit costs also contribute to reducing REM.

Daniel et al. (2024) analyze the effect of board composition on earnings management among Nigerian listed industrial goods firms from 2014 to 2023. The study utilizes secondary data from annual reports, analyzed through descriptive statistics and multiple regression. The sample consists of firms listed on the Nigerian Stock Exchange over a ten-year period. Findings reveal that board independence has a positive but statistically insignificant impact on earnings management. Board size, board meetings, and board gender diversity all exhibit negative but insignificant effects. These results offer valuable insights for policymakers and stakeholders regarding the influence of board composition on curbing earnings management in this sector.

Godo et al. (2024) investigated how corporate board attributes influence real earnings management in Nigerian listed financial institutions. The study used an ex-post facto research design and relied on secondary data from the annual reports of listed firms. A simple random sampling method selected 31 firms out of 57 over the financial years 2014 to 2023. To analyze the data, three panel regression models—pooled, fixed effect, and random effect—were employed, with the Hausman test determining the most suitable model. Analysis conducted with E-views 10 showed that board expertise, frequency of board meetings, and presence of female directors do not have a significant impact on real earnings management. The study concluded that the board serves as an effective corporate governance mechanism in reducing earnings manipulation.

Attia et al. (2024) examined the influence of gender diversity on financial reporting quality, focusing on both accrual and real earnings management. The sample consisted of 78 Egyptian companies listed between 2009 and 2021. Various models were used to measure earnings

management: accrual earnings management was assessed with four models including the modified Jones and Kasznik models, while real earnings management was captured using six proxies such as abnormal cash flows from operations and abnormal production costs. Employing the system generalized method of moments, the findings indicated that firms with greater gender diversity tend to reduce accrual earnings manipulation, except in the case of the modified Jones model. Furthermore, gender diversity positively correlated with financial reporting quality when measured by real earnings management proxies, except for one proxy (RM2), where a negative but insignificant relationship was found. Overall, the results support the view that boards with higher gender diversity are more effective in curbing earnings manipulation.

Okafor et al. (2024) explored the association between corporate governance variables—specifically board tenure, board expertise, and CEO ownership—and real earnings management in Nigerian listed financial firms. The study adopted a longitudinal design and analyzed data from 37 financial institutions selected purposively from 49 listed firms, covering 2016 to 2022. Using descriptive statistics, correlation analysis, and panel regression with a random effects model, results showed that board expertise and CEO ownership have positive but statistically insignificant relationships with real earnings management. Conversely, board tenure was significantly and negatively associated with real earnings management. Correlation results revealed negative relationships between board expertise, CEO ownership, and real earnings management, while board tenure showed a positive correlation with real earnings management.

Daddau and Bala (2024) investigated the link between board characteristics and earnings management among Nigerian banks over a ten-year period from 2010 to 2019. The population consisted of all 14 deposit money banks listed on the Nigerian Exchange Group as of December 31, 2019, with all included in the sample through census sampling. Using multiple regression analysis, findings indicated that board control reduces managers' tendencies to manipulate earnings, whereas board independence appears to increase earnings management. The study concludes that while board independence may facilitate earnings management, board control helps to restrain it in Nigerian banks. The authors recommend that regulatory bodies such as the Central Bank of Nigeria and the Financial Reporting Council encourage ownership concentration, given its role in limiting discretionary accruals in listed deposit money banks.

Abubakar et al. (2017) examined the relationship between board attributes and real earnings management among Nigerian financial institutions. Real earnings management was proxied using residuals from the Roychowdhury model (2006). Data were collected from 45 financial firms listed on the Nigerian Stock Exchange between 2011 and 2016. Analysis was conducted using Panel Corrected Standard Errors (PCSE) regression. Results revealed that board meetings and board expertise positively and significantly influence real earnings management, while female directors exert a significant negative impact. The study recommends that Nigerian regulatory authorities emphasize real earnings management techniques—such as cash flow from operations, discretionary expenses, and cost of goods sold—commonly recognized in developed economies, to better equip board members in constraining opportunistic managerial behavior in financial reporting.

Gap in Literature

Although several studies have examined the relationship between board diversity and earnings management, there remains a limited understanding of how financial constraints influence this dynamic, particularly in the context of Nigerian listed food and beverages companies. Prior research by Ibe et al. (2025) and Daniel et al. (2024) explored the impact of board independence and board composition on earnings management in banking and industrial sectors, respectively, but did not specifically consider financial constraints as a moderating

factor. Similarly, Hasan et al. (2025) and Timta et al. (2024) focused on board characteristics such as size and gender diversity in relation to earnings management without addressing liquidity issues that firms may face. Musa et al. (2024) and Godo et al. (2024) offered insights on board attributes and real earnings management in Nigerian firms but overlooked how short-term financial pressures could alter board effectiveness. Attia et al. (2024) provided evidence from Egyptian firms on gender diversity's role in reducing earnings manipulation, yet the moderating role of financial constraints remains underexplored. Okafor et al. (2024) and Daddau and Bala (2024) highlighted the influence of governance variables on earnings management in Nigerian financial institutions and banks but did not integrate the potential effects of liquidity constraints. Earlier work by Abubakar et al. (2017) linked board attributes to real earnings management but focused primarily on board meetings and expertise, without examining how financial health impacts these relationships. Collectively, these studies underscore the need for more focused research on how financial constraints moderate the influence of diverse board structures on earnings management, especially in Nigeria's food and beverages sector, which is yet to receive adequate scholarly attention.

METHODOLOGY

This study adopted an ex-post facto research design to examine the moderating effect of financial constraints on the relationship between board diversity and real earnings management among listed food and beverages companies in Nigeria. The ex-post facto design is appropriate because the study relies on historical financial and governance data that have already occurred and cannot be manipulated by the researcher (Muojekwu et al., 2025). This design enables the researcher to analyze causal relationships and patterns between board characteristics, liquidity constraints, and real earnings management over time.

The population of this study consists of all sixteen (16) food and beverages companies listed on the Nigerian Exchange Group (NGX) as of 2024. These include Bua Foods Plc, Cadbury Nigeria Plc, Champion Breweries Plc, Dangote Sugar Refinery Plc, Golden Guinea Breweries Plc, Guinness Nigeria Plc, Honeywell Flour Mill Plc, International Breweries Plc, McNichols Plc, Multi-Trex Integrated Foods Plc, Northern Nigeria Flour Mills Plc, Nascon Allied Industries Plc, Nestle Nigeria Plc, Nigerian Breweries Plc, Unilever Nigeria Plc, and Union Dicon Salt Plc (Nigerian Exchange Group, 2024).

The study employed a purposive sampling technique to select twelve (12) companies from the population based on the availability of complete and consistent annual reports for the period 2015–2024. The purposive approach is justified because it ensures that only firms with adequate financial disclosure and board composition information are included in the analysis. The sampled firms are Cadbury Nigeria Plc, Champion Breweries Plc, Dangote Sugar Refinery Plc, Guinness Nigeria Plc, Honeywell Flour Mill Plc, International Breweries Plc, Northern Nigeria Flour Mills Plc, Nascon Allied Industries Plc, Nestle Nigeria Plc, Nigerian Breweries Plc, Unilever Nigeria Plc, and Union Dicon Salt Plc. This sample provides a balanced representation of both large and medium-sized firms in the Nigerian food and beverages sector.

This study relied exclusively on secondary data obtained from the annual reports and financial statements of the selected firms for the period 2015–2024. These reports were sourced from the Nigerian Exchange Group database and the official websites of the respective companies. The data collected covered variables on board independence, board size, board gender diversity, financial constraints (measured by short-term liquidity ratios), and real earnings management indicators. The ten-year data period was chosen to capture consistent board and financial practices before and after major corporate governance reforms in Nigeria.

The study's variables include board independence, board size, board gender diversity, financial constraints, and real earnings management. These variables were operationalized as follows:

Table 1
Measurement of Variables

Variable	Measurement	Source
Board Independence (BIND)	Proportion of independent directors to total board members	Ibe et al. (2025)
Board Size (BSIZE)	Total number of directors on the board	Musa et al. (2024)
Board Gender Diversity (BGD)	Proportion of female directors to total board members	Timta et al. (2024)
Financial Constraints (FC)	Measured using short-term liquidity ratio (current ratio = current assets ÷ current liabilities)	Gunawan (2023)
Real Earnings Management (REM)	Operating Cash Flow ÷ Net Income	Ruiz (2023)

Source: Researcher's Compilation (2025)

The study adapted the model by Daniel et al. (2024) whose model is restated below:

$$DAC_{it} = \beta_0 + \beta_1 BInd_{it} + \beta_2 BSize_{it} + \beta_5 EPS_{it} + \epsilon_{it} \dots \dots \dots \text{eqi}$$

Where:

DAC_{it} = Discretionary accruals for firm i in year t

$BInd_{it}$ = Board Independence for firm i in year t

$BSize_{it}$ = Board size for firm i in year t

EPS_{it} = Earnings Per Share for firm i in year t

β_1-3 = Parameters of each variable

To assess the moderating effect of short-term liquidity constraints on the relationship between board diversity and real earnings management, the study specified both baseline and moderated regression models as follows:

Baseline Model:

$$REM_{it} = \beta_0 + \beta_1 BIN_{it} + \beta_2 BSZ_{it} + \beta_3 BGD_{it} + \epsilon_{it} \dots \dots \dots \text{eqii}$$

Moderated Model using short-term financial constraint (STFC):

$$REM_{it} = \beta_0 + \beta_1 (STFC * BIN)_{it} + \beta_2 (STFC * BSZ)_{it} + \beta_3 (STFC * BGD)_{it} + \epsilon_{it} \dots \dots \dots \text{eqiii}$$

Where:

REM_{it} = Real earnings management for firm i at time t

BIN_{it} = Board independence

BSZ_{it} = Board size

BGD_{it} = Board gender diversity

$STFC_{it}$ = Financial constraint (short-term liquidity)

β_0 = Intercept

β_1-3 = Coefficients of explanatory variables

ϵ_{it} = Error term

The study employed both descriptive and inferential statistical techniques. Descriptive statistics (mean, standard deviation, minimum, and maximum) were used to summarize the characteristics of the data. For inferential analysis, a Fixed Effects Model (FEM) regression was applied. The FEM was chosen because it effectively controls for unobserved heterogeneity across firms that may influence real earnings management, such as firm culture or long-term governance practices. The Hausman test was used to confirm the suitability of the fixed effects model over the random effects alternative. Diagnostic tests for multicollinearity, heteroskedasticity, and serial correlation were also conducted to ensure robustness of results.

All hypotheses were tested at a 5% level of significance ($p < 0.05$). The decision rule is that if the p -value < 0.05 , the null hypothesis is rejected, indicating a statistically significant moderating effect of financial constraints. However, if the p -value ≥ 0.05 , the null hypothesis is not rejected, implying no significant moderating effect.

DATA ANALYSIS

Descriptive Analysis and Model Diagnostics

This study examined the moderating role of financial constraints on the effect of board diversity on real earnings management among listed food and beverages companies in Nigeria. Specifically, it aimed to ascertain the moderating effect of short-term liquidity constraints on the relationship between board independence, board size, and board gender diversity and real earnings management. Secondary data were collected from the annual reports of the firms over a ten year period that spanned 2015–2024 (see Appendix A). Table 2 below shows the descriptive analysis of the data.

Table 2

Descriptive Statistics

	REM	BIN	BSZ	BGD	STFC
Mean	-0.298370	0.769615	9.866667	0.208802	1.010722
Median	0.852206	0.777778	10.00000	0.222222	0.898121
Maximum	17.78842	0.909091	15.00000	0.571429	2.880813
Minimum	-132.9362	0.571429	6.000000	0.000000	0.005775
Std. Dev.	12.83626	0.091665	2.024777	0.127229	0.638448
Skewness	-9.333976	-0.152525	0.414184	0.359006	0.919837
Kurtosis	96.80341	1.957953	2.641469	3.235112	3.715298
Jarque-Bera	45737.86	5.894590	4.073686	2.854091	19.48024
Probability	0.000000	0.052481	0.130440	0.240017	0.000059
Sum	-35.80436	92.35384	1184.000	25.05622	121.2866
Sum Sq. Dev.	19607.58	0.999904	487.8667	1.926280	48.50626
Observations	120	120	120	120	120

Source: Eviews 10 (2025)

Table 2 presents the descriptive statistics for the variables used in this study, including Real Earnings Management (REM), Board Independence (BIN), Board Size (BSZ), Board Gender Diversity (BGD), and Short-Term Financial Constraints (STFC). The interpretations are discussed variable by variable below. The descriptive statistics in **Table 2** show that **Real Earnings Management (REM)** has a mean value of -0.298370, suggesting that, on average, the sampled food and beverages companies recorded lower operating cash flow relative to net income, indicating potential income-increasing manipulation through real activities. The maximum value of 17.78842 and minimum value of -132.9362 reflect wide variability in firms' earnings management practices, possibly influenced by differences in managerial discretion and financial conditions. The standard deviation of 12.83626 further indicates high dispersion, showing that the extent of real earnings management differs significantly across firms and periods. The negative skewness value (-9.333976) reveals that the data distribution is heavily skewed to the left, implying that most firms reported higher operating cash flows relative to income in fewer cases, while a few recorded extremely negative values. The kurtosis of 96.80341 denotes a highly peaked distribution, suggesting the presence of outliers or extreme observations. The Jarque-Bera probability (0.000000) confirms non-normality, implying that firms' real earnings management behaviors are not symmetrically distributed over time.

For **Board Independence (BIN)**, Table 2 reveals a mean of 0.769615, indicating that approximately 77% of directors on the boards of sampled firms were independent, reflecting strong adherence to corporate governance principles among listed food and beverages companies. The maximum value (0.909091) and minimum (0.571429) suggest that independence levels vary moderately across firms, with no firm falling below 57% independent representation. The standard deviation of 0.091665 indicates low dispersion, implying that board independence structures are relatively uniform across the sample. The skewness (-0.152525) shows a nearly symmetric distribution, while kurtosis (1.957953) suggests a slightly flatter distribution compared to normal. The Jarque-Bera probability of

0.052481 is marginally above the 5% significance level, implying that the distribution of board independence can be considered approximately normal.

Regarding **Board Size (BSZ)**, the mean value of 9.866667 in Table 2 indicates that, on average, the boards of the sampled firms comprise about 10 members, consistent with typical corporate governance standards in Nigeria. The maximum value of 15 and minimum of 6 show that firm boards range from moderately small to relatively large sizes. The standard deviation (2.024777) signifies moderate variability among firms in terms of board composition. A positive skewness of 0.414184 suggests a slight rightward distribution, indicating that more firms have smaller boards, while a few have significantly larger ones. The kurtosis value of 2.641469 shows a distribution that is close to normal, and the Jarque-Bera probability of 0.130440 (>0.05) confirms that the data for board size are normally distributed, supporting the reliability of this governance indicator.

In terms of **Board Gender Diversity (BGD)**, Table 2 shows a mean of 0.208802, meaning that female directors constitute about 21% of the total board membership on average. This indicates progress in gender inclusion, although the figure still reflects male dominance in the boards of Nigerian food and beverages firms. The maximum value (0.571429) implies that some firms have achieved up to 57% female representation, while the minimum value (0.000000) shows that a few boards had no female members during the study period. The standard deviation of 0.127229 denotes moderate variation in gender representation across firms. The skewness (0.359006) indicates a slight rightward distribution, suggesting that most firms have low to moderate female representation. A kurtosis of 3.235112, being close to 3, points to a normal distribution pattern. The Jarque-Bera probability of 0.240017 confirms normality, indicating that gender diversity levels are relatively stable among the sampled firms.

Finally, for **Short-Term Financial Constraints (STFC)**, Table 2 shows a mean value of 1.010722, suggesting that, on average, current assets slightly exceed current liabilities across firms, reflecting moderate liquidity and limited financial strain. The maximum (2.880813) and minimum (0.005775) values demonstrate that while some firms maintained strong liquidity positions, others experienced severe short-term constraints. The standard deviation (0.638448) reveals moderate variability in liquidity across firms. The positive skewness (0.919837) indicates that most firms cluster around lower liquidity ratios, while a few have higher-than-average liquidity. The kurtosis of 3.715298 reflects a leptokurtic distribution, implying heavier tails and the presence of some firms with extreme liquidity conditions. The Jarque-Bera probability of 0.000059, being below 0.05, indicates non-normality, suggesting that financial constraint conditions differ considerably among the firms studied.

Table 3

Correlational Analysis

Probability	REM	BIN	BSZ	BGD	STFC
REM	1.000000				

BIN	0.062482	1.000000			
	0.4978	-----			
BSZ	-0.063329	0.035109	1.000000		
	0.4920	0.7034	-----		
BGD	0.104276	0.035210	-0.170325	1.000000	
	0.2570	0.7026	0.0629	-----	
STFC	0.073481	0.101908	0.045763	0.110563	1.000000
	0.4251	0.2681	0.6197	0.2293	-----

Source: Eviews 10 (2025)

Table 3 presents the correlation analysis between real earnings management (REM) and the board and financial variables. The relationship between board independence (BIN) and REM is positive but very weak at 0.06, with a high probability value of 0.50, indicating no

statistically significant association. Similarly, board size (BSZ) shows a slight negative correlation of about -0.06 with REM, but this too is not significant, given the probability of 0.49. Board gender diversity (BGD) has a positive correlation of 0.10 with REM, yet the probability of 0.26 means this relationship is not statistically meaningful. Lastly, short-term financial constraints (STFC) show a small positive correlation of 0.07 with REM, but the probability value of 0.43 suggests this is not significant either.

Table 4

Hausman Specification Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.255690	3	0.0165

Source: Eviews 10 (2025)

Table 4 shows the results of the Hausman specification test, which helps determine the appropriate regression model between fixed effects and random effects for analyzing the data. The test evaluates whether the unique errors are correlated with the regressors in the model. The probability value of 0.0165 is less than the typical significance level of 0.05, indicating that the null hypothesis of no correlation should be rejected. This suggests that the random effects model is not suitable, and the fixed effects model is more appropriate for this study, as it accounts for the possible correlation between the individual effects and the explanatory variables.

Table 5

Unmoderated Fixed Effect Model

Dependent Variable: REM
Method: Panel EGLS (Cross-section weights)
Date: 10/05/25 Time: 08:46
Sample: 2015 2024
Periods included: 10
Cross-sections included: 12
Total panel (balanced) observations: 120
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BIN	12.71767	4.271198	2.977543	0.0036
BSZ	-0.158356	0.132762	-1.192780	0.2356
BGD	-13.72385	2.317707	-5.921304	0.0000
C	-5.658074	4.042503	-1.399646	0.1646

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.441264	Mean dependent var	2.056027
Adjusted R-squared	0.366766	S.D. dependent var	12.28710
S.E. of regression	9.746445	Sum squared resid	9974.286
F-statistic	5.923166	Durbin-Watson stat	2.203587
Prob(F-statistic)	0.000000		

Source: Eviews 10 (2025)

Table 5 presents the results of the unmoderated fixed effect model used to examine the direct relationship between board diversity variables and real earnings management (REM). The coefficient for board independence (BIN) is positive and statistically significant at the 1% level, suggesting that a higher proportion of independent directors on the board is associated with an increase in real earnings management among the sampled firms. This indicates that board independence may not necessarily curb earnings manipulation in this context. Board size (BSZ) has a negative coefficient, but it is not statistically significant, implying that the number of directors on the board does not have a meaningful effect on REM in this model. On the other hand, board gender diversity (BGD) shows a significant negative relationship with REM at the 1% level, meaning that firms with a higher proportion of female directors tend to engage less in real earnings management. The constant term is not statistically significant, so it does not provide meaningful information about REM in the absence of the explanatory variables.

The overall fit of the model, as indicated by the adjusted R-squared value of about 37%, shows that the board diversity variables explain just over a third of the variation in real earnings management across the firms in the sample. The Durbin-Watson statistic, which tests for autocorrelation in the residuals, is close to 2, indicating no serious autocorrelation issues. The F-statistic is highly significant, confirming that the model as a whole fits the data well and that the explanatory variables collectively have a statistically significant impact on real earnings management. This model suggests a complex relationship between board characteristics and earnings management, highlighting the different roles board independence and gender diversity may play in influencing corporate behavior in the Nigerian food and beverages sector.

Test of Hypotheses

The hypotheses of the study were tested using the moderated regression result shown below in Table 6

Test of Hypotheses Using Moderated Fixed Effect Model

Dependent Variable: REM

Method: Panel Least Square (Cross-section weights)

Date: 10/05/25 Time: 08:45

Sample: 2015 2024

Periods included: 10

Cross-sections included: 12

Total panel (balanced) observations: 120

Linear estimation after one-step weighting matrix

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
STFC*BIN	8.202243	1.964862	4.174462	0.0001
STFC*BSZ	-0.293743	0.082675	-3.552980	0.0006
STFC*BGD	-9.889241	1.766951	-5.596782	0.0000
C	-1.605455	0.576583	-2.784428	0.0064

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.424081	Mean dependent var	2.389540
Adjusted R-squared	0.347292	S.D. dependent var	14.07501
S.E. of regression	11.42084	Sum squared resid	13695.74
F-statistic	5.522667	Durbin-Watson stat	2.031883
Prob(F-statistic)	0.000000		

Source: Eviews 10 (2025)

The results in Table 6 test whether short-term liquidity constraints (measured by STFC) significantly moderate the effect of board diversity variables on real earnings management (REM). The adjusted R-squared of approximately 0.347 indicates that about 34.7% of the variation in REM is explained by the interaction between board diversity variables and financial constraints. Although slightly lower than the unmoderated model, this shows that the interaction terms provide meaningful explanation of changes in earnings management. The model's F-statistic is highly significant ($p < 0.001$), confirming that the overall moderated regression model is valid. The Durbin-Watson statistic of around 2.03 suggests that the residuals are independent, and there is no autocorrelation problem in the panel data.

Test of Hypothesis I

H₀₁: Short-term liquidity constraints do not significantly moderate effect of board independence on real earnings management among listed food and beverages companies in Nigeria.

Examining the first hypothesis, short-term liquidity constraints significantly moderate the effect of board independence on REM, as shown by the positive and statistically significant coefficient of 8.20 ($p = 0.0001$). This means that as firms face tighter short-term liquidity pressures, the effect of having more independent directors on the board leads to an even greater increase in real earnings management. In other words, financial constraints amplify the tendency of independent boards to engage in earnings manipulation through real activities. The alternate hypothesis was accepted since the p-value is less than 0.05. Thus, short-term liquidity constraints positively moderate the effect of board independence on real earnings management among listed food and beverages companies in Nigeria ($\beta = 8.20$, $p = 0.0001$).

Test of Hypothesis II

H₀₂: Short-term liquidity constraints do not significantly moderate the effect of board size on real earnings management among listed food and beverages companies in Nigeria.

For the second hypothesis, the coefficient for the interaction between short-term liquidity constraints and board size is negative and significant (-0.29 , $p = 0.0006$). This indicates that when firms experience liquidity pressures, the presence of larger boards tends to reduce real earnings management more effectively. In this context, financial constraints strengthen the ability of bigger boards to restrain earnings manipulation, suggesting that board size plays a more active role under financial stress. The alternate hypothesis was accepted since the p-value is less than 0.05. Thus, short-term liquidity constraints negatively moderate the effect of board size on real earnings management among listed food and beverages companies in Nigeria ($\beta = -0.29$, $p = 0.0006$).

Test of Hypothesis III

H₀₃: Short-term liquidity constraints do not significantly moderate the effect of board gender diversity on real earnings management among listed food and beverages companies in Nigeria.

Regarding the third hypothesis, the interaction between short-term liquidity constraints and board gender diversity has a strong negative and statistically significant effect on REM (-9.89 , $p = 0.0000$). This shows that financial constraints increase the negative effect of board gender diversity on real earnings management. Simply put, as firms face liquidity challenges, boards with more female directors become even better at limiting real earnings management practices. This finding suggests that female directors may bring greater discipline and ethical oversight especially during times of financial pressure. The alternate hypothesis was accepted since the p-value is less than 0.05. Thus, short-term liquidity constraints negatively moderate the effect of board gender diversity on real earnings management among listed food and beverages companies in Nigeria ($\beta = -9.89$, $p = 0.0000$).

Discussion of Findings

The finding that short-term liquidity constraints positively moderate the effect of board independence on real earnings management, increasing earnings manipulation, reflects a complex dynamic where independent directors may face heightened pressure in financially constrained firms. This aligns with the results of Ibe et al. (2025), who found board independence to have a positive and significant effect on earnings management, suggesting that independence alone does not guarantee restraint from manipulation. Daddau and Bala (2024) also observed that board independence can increase earnings management in Nigerian banks, implying that independent directors might sometimes struggle to resist pressures when liquidity is tight. Similarly, Daniel et al. (2024) reported a positive though insignificant effect of board independence on earnings manipulation, indicating the challenge of controlling opportunistic behavior even with independent boards. These outcomes imply that while independent directors are meant to oversee and prevent manipulation, under liquidity stress their effectiveness may be compromised, possibly due to the urgency to meet financial targets or maintain investor confidence.

Regarding board size, the finding that short-term liquidity constraints enhance the ability of larger boards to reduce earnings manipulation suggests that having more directors may strengthen monitoring during financial distress. This corresponds with Musa et al. (2024), who found that board size significantly reduces real earnings management, especially when boards are more effective and experienced. Okafor et al. (2024) also linked board tenure and expertise, often found in larger boards, to a reduction in earnings manipulation. However, Hasan et al. (2025) reported no significant effect of board size on earnings management, indicating some inconsistency across sectors and contexts. The negative moderation here may reflect the collective capacity of larger boards to pool diverse knowledge and resources, which becomes more crucial when firms face liquidity pressures, enabling them to better restrain opportunistic financial reporting.

The result showing that short-term liquidity constraints strengthen the negative effect of board gender diversity on real earnings management is supported by several studies highlighting women's roles in enhancing governance quality. Attia et al. (2024) found that gender-diverse boards generally reduce real earnings manipulation, especially under challenging conditions. Similarly, Abubakar et al. (2017) showed female directors have a significant negative impact on real earnings management, suggesting that gender diversity fosters more ethical financial oversight. Although Timta et al. (2024) found a negative but statistically insignificant impact of gender diversity on earnings quality, their recommendation to strengthen diverse representation supports the idea that women's presence improves board vigilance. Godo et al. (2024) also concluded that boards with female directors contribute to reducing earnings manipulation. The stronger moderating effect observed here might indicate that female directors bring heightened scrutiny and risk aversion during times of financial stress, which helps curb manipulative practices more effectively.

SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATION

Summary of Findings

The study examined the effect of board diversity on earnings management of food and beverage firms in Nigeria, while the specific objectives focus on the moderating role of short term liquidity constraint on board independent, board size and board gender diversity. The findings revealed that:

1. Short-term liquidity constraints positively moderate the effect of board independence on real earnings management ($\beta = 8.20$, $p = 0.0001$) at 5% significance level.
2. Short-term liquidity constraints negatively moderate the effect of board size on real earnings management ($\beta = -0.29$, $p = 0.0006$) at 5% significance level.

3. Short-term liquidity constraints negatively moderate the effect of board gender diversity on real earnings management ($\beta = -9.89$, $p = 0.0000$) at 5% significance level.

Conclusion

The findings reveal complex dynamics between financial pressures and board characteristics in shaping corporate behavior around earnings management. When companies face short-term liquidity challenges, the presence of independent directors seems to coincide with a heightened level of earnings manipulation, suggesting that financial stress may push boards to adopt or tolerate more aggressive reporting strategies despite their independence. This highlights how financial constraints can influence governance structures in ways that challenge conventional expectations about the protective role of independent directors. On the other hand, larger boards appear to become more effective in limiting earnings manipulation under liquidity pressures, indicating that an increased number of directors may provide a collective strength or diversity of perspectives that help resist the temptation to distort financial results when resources are tight. Additionally, boards with greater female representation tend to show an even stronger resistance to real earnings manipulation during times of financial strain. This may reflect heightened ethical standards or greater vigilance associated with gender diversity, especially when firms are vulnerable to short-term financial difficulties. In all, the interaction between financial constraints and board attributes underscores the importance of contextual factors in corporate governance, revealing that board effectiveness in curbing earnings management is not fixed but can vary depending on external economic conditions. The results also suggest that financial health and governance characteristics are closely intertwined, influencing how firms respond to pressure to manage earnings. This subtle relationship challenges simplified views of board roles and points to the need for a deeper understanding of how economic realities shape corporate decision-making and oversight functions. These findings provide a richer picture of the conditions under which different board features contribute to either increased risk or enhanced control over financial reporting practices.

Recommendations

1. Based on the finding that short-term liquidity constraints increase the effect of board independence on earnings manipulation, regulators and company shareholders should ensure that independent directors receive specialized training on financial distress indicators and ethical financial reporting. This will help them better recognize and resist pressures to engage in earnings manipulation during times of financial difficulty, thereby improving oversight effectiveness.
2. In light of the finding that liquidity constraints enhance the ability of larger boards to reduce earnings manipulation, company boards should consider maintaining or increasing the number of directors, especially during financially challenging periods. Board members should be encouraged to leverage their collective experience and diverse perspectives to strengthen internal controls and resist manipulative financial practices.
3. Given the finding that the presence of female directors reduces earnings manipulation more strongly under liquidity constraints, corporate governance bodies and shareholders should actively support the inclusion and meaningful participation of women on boards. Ensuring gender diversity can provide additional oversight capacity that helps safeguard financial integrity when companies face short-term financial pressures.

Contribution to Knowledge

This study contributes to the literature by addressing a significant gap in understanding how financial constraints influence the relationship between board diversity and real earnings management, specifically within Nigerian listed food and beverages companies. While earlier research has explored board independence, composition, size, and gender diversity in various sectors such as banking, industrial goods, and financial institutions, the moderating effect of

financial pressures on board effectiveness has largely been overlooked. Existing studies by Ibe et al., Daniel et al., Hasan et al., Timta et al., Musa et al., and Godo et al. have provided valuable insights into board attributes and earnings management but did not consider how short-term liquidity constraints might alter these dynamics. Additionally, research from Attia et al. in the Egyptian context and work by Okafor et al. and Daddau and Bala in Nigerian financial institutions has not integrated the role of financial constraints in their analyses. Earlier investigations by Abubakar et al. also focused mainly on board meetings and expertise without linking these factors to a company's financial health. By focusing on the food and beverages sector in Nigeria and examining how financial constraints moderate the impact of board independence, size, and gender diversity on earnings management, this study fills an important gap and adds to the understanding of corporate governance in environments facing financial pressures.

Limitations of the Study and Suggestion for Further Studies

One limitation of this study is that it focused only on listed food and beverages companies in Nigeria, which means the findings may not apply to other industries or countries. Also, the study relied solely on secondary data from annual reports, so it could not capture real-time changes or more detailed internal company information. The sample size was relatively small, with just twelve companies studied, which may limit how broadly the results can be generalized. Lastly, the study only looked at short-term financial constraints, leaving out other possible financial factors that could affect board diversity and earnings management.

For future research, it would be helpful to include companies from different industries to see if the findings hold true in other sectors. Researchers could also collect primary data through surveys or interviews to get deeper information on how board members influence earnings management. Studies might explore other financial constraints beyond short-term liquidity, such as long-term debt or capital availability. Expanding the sample size and including firms from multiple countries would also provide a better understanding of how these factors interact in different business environments.

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Appendix A Data Presentation

Firm	Year	Net Income (N'000)	Current Asset (N'000)	Current Liabilities (N'000)	Operating Cashflow (N'000)	Non Executive directors	Female directors	BSZ	BIN	BGD	STFC	REM	BSZ* STFC	BIN* STFC	BGD* STFC
Cadbury	2015	1420616	12744984	11651634	3781283	5	2	7	.71	.29	1.09	2.66	7.66	.78	.31
Cadbury	2016	-732853	13824124	12820278	-1848864	5	2	7	.71	.29	1.08	2.52	7.55	.77	.31
Cadbury	2017	711365	14240363	12529586	-1471631	5	2	7	.71	.29	1.14	-2.07	7.96	.81	.32
Cadbury	2018	1698294	14029119	10085404	6695082	5	2	7	.71	.29	1.39	3.94	9.74	.99	.40
Cadbury	2019	1353608	15174042	9901393	2285899	5	2	7	.71	.29	1.53	1.69	10.73	1.09	.44
Cadbury	2020	281824	20383661	14474694	4254793	6	4	8	.75	.50	1.41	15.10	11.27	1.06	.70
Cadbury	2021	491468	30635578	22024707	674014	5	4	7	.71	.57	1.39	1.37	9.74	.99	.79
Cadbury	2022	194063	45596905	37088401	-1993628	5	4	7	.71	.57	1.23	-10.27	8.61	.88	.70
Cadbury	2023	7872189	40297701	69193515	2797230	4	3	6	.67	.50	.58	.36	3.49	.39	.29
Cadbury	2024	5961223	39357777	67241651	20109534	6	4	8	.75	.50	.59	3.37	4.68	.44	.29
Champion Brewery	2015	206769	2325616	3073998	1287183	8	1	9	.89	.11	.76	6.23	6.81	.67	.08
Champion Brewery	2016	617634	2166255	2208173	368019	10	1	11	.91	.09	.98	.60	10.79	.89	.09
Champion Brewery	2017	595189	2161853	1627573	47221	10	1	11	.91	.09	1.33	.08	14.61	1.21	.12
Champion Brewery	2018	-223784	2054569	2305491	1142454	10	2	11	.91	.18	.89	-5.11	9.80	.81	.16
Champion Brewery	2019	241489	2337513	2564456	1637027	10	2	11	.91	.18	.91	6.78	10.03	.83	.17
Champion Brewery	2020	461358	1807338	2251657	1976064	10	2	11	.91	.18	.80	4.28	8.83	.73	.15
Champion Brewery	2021	1738314	4066367	3435750	3759396	8	1	9	.89	.11	1.18	2.16	10.65	1.05	.13
Champion Brewery	2022	2271277	4672413	2926961	2260174	8	1	9	.89	.11	1.60	1.00	14.37	1.42	.18
Champion Brewery	2023	603966	5202552	7968406	5822757	8	1	9	.89	.11	.65	9.64	5.88	.58	.07
Champion Brewery	2024	2328006	7323829	9217856	5183808	8	1	9	.89	.11	.79	2.23	7.15	.71	.09
Dangote Sugar	2015	18784857	72412320	35516958	10655421	8	2	9	.89	.22	2.04	.57	18.35	1.81	.45
Dangote Sugar	2016	20314796	142774425	95709749	34548986	8	2	9	.89	.22	1.49	1.70	13.43	1.33	.33
Dangote Sugar	2017	47014188	157249110	91644487	26455953	8	2	9	.89	.22	1.72	.56	15.44	1.53	.38
Dangote Sugar	2018	35987387	144937739	66033588	-7751583	8	2	9	.89	.22	2.19	-.22	19.75	1.95	.49
Dangote Sugar	2019	18321146	161811264	73352250	20225266	8	2	9	.89	.22	2.21	1.10	19.85	1.96	.49
Dangote Sugar	2020	49795147	181260124	122752272	43553241	8	2	9	.89	.22	1.48	.87	13.29	1.31	.33
Dangote Sugar	2021	39678813	208172533	207221431	106378342	8	2	9	.89	.22	1.00	2.68	9.04	.89	.22
Dangote Sugar	2022	82460804	332951753	305170514	108946471	7	2	8	.88	.25	1.09	1.32	8.73	.95	.27
Dangote Sugar	2023	73755655	399385081	518900557	61199772	9	4	10	.90	.40	.77	.83	7.70	.69	.31
Dangote Sugar	2024	14232580	424306147	798723006	-370325889	9	4	11	.82	.36	.53	-26.02	5.84	.43	.19
Guinness Nig. Plc	2015	15667379	33511512	46100344	32538985	9	2	12	.75	.17	.73	2.08	8.72	.55	.12
Guinness Nig. Plc	2016	4415623	47869835	67109622	-1523848	9	3	12	.75	.25	.71	-.35	8.56	.53	.18
Guinness Nig. Plc	2017	10186330	57226823	63719662	18045541	10	3	12	.83	.25	.90	1.77	10.78	.75	.22
Guinness Nig. Plc	2018	13386248	54610047	42847115	10589789	10	3	12	.83	.25	1.27	.79	15.29	1.06	.32
Guinness Nig. Plc	2019	8966036	59344022	48856474	13406042	12	4	14	.86	.29	1.21	1.50	17.01	1.04	.35
Guinness Nig. Plc	2020	-12832256	53972538	60597976	15089585	11	4	13	.85	.31	.89	-1.18	11.58	.75	.27
Guinness Nig. Plc	2021	9871498	74735545	82958885	52380639	11	3	13	.85	.23	.90	5.31	11.71	.76	.21
Guinness Nig. Plc	2022	23900060	117601036	113732630	28118793	9	2	11	.82	.18	1.03	1.18	11.37	.85	.19
Guinness Nig. Plc	2023	23357684	141802973	183671423	34379964	11	3	13	.85	.23	.77	1.47	10.04	.65	.18
Guinness Nig. Plc	2024	25407481	103555556	222684738	80139988	9	2	12	.75	.17	.47	3.15	5.58	.35	.08
Honeywell	2015	2184525	18624169	31860220	5602147	9	2	14	.64	.14	.58	2.56	8.18	.38	.08
Honeywell	2016	-2049565	22257649	44213252	10131641	9	2	14	.64	.14	.50	-4.94	7.05	.32	.07
Honeywell	2017	8262788	13011890	6318697	-2533081	9	2	14	.64	.14	2.06	-.31	28.83	1.32	.29

Honeywell	2018	9477182	21611089	28207258	14725910	9	2	14	.64	.14	.77	1.55	10.73	.49	.11
Honeywell	2019	3916298	3084383	42301619	9413187	7	1	9	.78	.11	.07	2.40	.66	.06	.01
Honeywell	2020	5497633	36891364	53639919	5417298	7	1	9	.78	.11	.69	.99	6.19	.53	.08
Honeywell	2021	7646049	45936677	61940563	12880439	8	1	9	.89	.11	.74	1.68	6.67	.66	.08
Honeywell	2022	4681168	52621281	67182805	-553009	8	1	9	.89	.11	.78	-.12	7.05	.70	.09
Honeywell	2023	5033131	79087358	90173174	-4115393	7	1	8	.88	.13	.88	-.82	7.02	.77	.11
Honeywell	2024	28402244	67134834	88779107	70737069	6	1	7	.86	.14	.76	2.49	5.29	.65	.11
International Breweries	2015	4635261	7329665	9975208	3151232	7	1	9	.78	.11	.73	.68	6.61	.57	.08
International Breweries	2016	5141112	8083481	15846886	7901718	7	1	9	.78	.11	.51	1.54	4.59	.40	.06
International Breweries	2017	8084425	11939249	26052094	7549199	6	1	8	.75	.13	.46	.93	3.67	.34	.06
International Breweries	2018	7896055	65545955	118879435	-30936156	9	3	13	.69	.23	.55	-3.92	7.17	.38	.13
International Breweries	2019	-20984992	81585632	204106063	41686120	9	3	12	.75	.25	.40	-1.99	4.80	.30	.10
International Breweries	2020	-26913463	92687325	217921521	50732498	9	3	12	.75	.25	.43	-1.89	5.10	.32	.11
International Breweries	2021	-18042670	188528019	325679434	52041595	9	3	12	.75	.25	.58	-2.88	6.95	.43	.14
International Breweries	2022	-21332473	180326119	210841321	42666952	9	3	12	.75	.25	.86	-2.00	10.26	.64	.21
International Breweries	2023	-79007030	385608590	590601320	76956597	9	2	12	.75	.17	.65	-.97	7.83	.49	.11
International Breweries	2024	-91077921	338578281	256228762	148925789	9	3	13	.69	.23	1.32	-1.64	17.18	.91	.30
Nascon	2015	3028371	9385415	7951500	4007770	8	4	9	.89	.44	1.18	1.32	10.62	1.05	.52
Nascon	2016	3818674	18203692	9385415	2238497	8	4	10	.80	.40	1.94	.59	19.40	1.55	.78
Nascon	2017	7626856	20702206	16615330	13835753	8	3	10	.80	.30	1.25	1.81	12.46	1.00	.37
Nascon	2018	5981006	18565142	16088719	1021757	8	3	10	.80	.30	1.15	.17	11.54	.92	.35
Nascon	2019	2901372	19854173	18742264	6090389	8	3	10	.80	.30	1.06	2.10	10.59	.85	.32
Nascon	2020	4027538	23910652	25521661	8020924	8	3	10	.80	.30	.94	1.99	9.37	.75	.28
Nascon	2021	4316502	22620028	20218075	4995649	8	3	10	.80	.30	1.12	1.16	11.19	.90	.34
Nascon	2022	8674482	39167216	30489559	3499588	8	3	10	.80	.30	1.28	.40	12.85	1.03	.39
Nascon	2023	21096069	67369542	49659750	20049817	8	3	10	.80	.30	1.36	.95	13.57	1.09	.41
Nascon	2024	23037405	62421448	26337166	4164628	8	4	10	.80	.40	2.37	.18	23.70	1.90	.95
Nestle	2015	33747243	48718686	59731857	39877436	5	2	8	.63	.25	.82	1.18	6.52	.51	.20
Nestle	2016	38213337	97736155	121033434	61484847	6	1	9	.67	.11	.81	1.61	7.27	.54	.09
Nestle	2017	55698373	72270783	79680495	19235881	5	1	8	.63	.13	.91	.35	7.26	.57	.11
Nestle	2018	60640731	82734317	92117501	74618791	6	1	8	.75	.13	.90	1.23	7.19	.67	.11
Nestle	2019	72062046	107037484	125535430	49945530	6	2	8	.75	.25	.85	.69	6.82	.64	.21
Nestle	2020	64418583	151501455	166030352	63797809	6	1	8	.75	.13	.91	.99	7.30	.68	.11
Nestle	2021	71965945	203924326	195517985	65927085	6	2	9	.67	.22	1.04	.92	9.39	.70	.23
Nestle	2022	87468624	290511904	218404562	-4432963	6	2	9	.67	.22	1.33	-.05	11.97	.89	.30
Nestle	2023	123787596	361245786	290637709	82702831	7	2	10	.70	.20	1.24	.67	12.43	.87	.25
Nestle	2024	167876262	358303075	401426871	5858732	6	3	9	.67	.33	.89	.03	8.03	.60	.30
Nigerian Breweries	2015	62269368	57480020	140655590	72673843	9	2	15	.60	.13	.41	1.17	6.13	.25	.05
Nigerian Breweries	2016	52908411	74558034	144855800	70210871	9	2	15	.60	.13	.51	1.33	7.72	.31	.07
Nigerian Breweries	2017	57126310	87491662	156698905	72113517	9	2	13	.69	.15	.56	1.26	7.26	.39	.09
Nigerian Breweries	2018	36956798	86282924	140383143	30567698	9	3	11	.82	.27	.61	.83	6.76	.50	.17
Nigerian Breweries	2019	35254672	72102220	139440641	38576653	9	3	11	.82	.27	.52	1.09	5.69	.42	.14
Nigerian Breweries	2020	29817785	92120104	209075927	84793449	8	3	10	.80	.30	.44	2.84	4.41	.35	.13
Nigerian Breweries	2021	41811987	118246489	269422890	90847120	9	3	11	.82	.27	.44	2.17	4.83	.36	.12
Nigerian Breweries	2022	52555236	157189739	408168868	22506395	10	5	12	.83	.42	.39	.43	4.62	.32	.16

Nigerian Breweries	2023	44498680	229582795	584034939	-74627156	8	4	10	.80	.40	.39	-1.68	3.93	.31	.16
Nigerian Breweries	2024	68403101	423193593	611057090	48749913	7	3	9	.78	.33	.69	.71	6.23	.54	.23
Northern Nig. Flour Mills	2015	-279866	1688990	599740	555099	9	0	11	.82	.00	2.82	-1.98	30.98	2.30	.00
Northern Nig. Flour Mills	2016	-280480	1081103	375277	-527392	10	0	12	.83	.00	2.88	1.88	34.57	2.40	.00
Northern Nig. Flour Mills	2017	6556	2291796	2980114	-871530	8	0	11	.73	.00	.77	-132.94	8.46	.56	.00
Northern Nig. Flour Mills	2018	348379	3715732	3374312	-268417	9	0	11	.82	.00	1.10	-.77	12.11	.90	.00
Northern Nig. Flour Mills	2019	527868	2786633	2885324	1220540	8	0	11	.73	.00	.97	2.31	10.62	.70	.00
Northern Nig. Flour Mills	2020	562192	4752125	4783206	3158838	8	0	11	.73	.00	.99	5.62	10.93	.72	.00
Northern Nig. Flour Mills	2021	328293	3786801	3833773	-298921	8	0	10	.80	.00	.99	-.91	9.88	.79	.00
Northern Nig. Flour Mills	2022	388072	9456970	9791386	2271879	9	0	11	.82	.00	.97	5.85	10.62	.79	.00
Northern Nig. Flour Mills	2023	567738	10259350	10195986	1226660	10	0	11	.91	.00	1.01	2.16	11.07	.91	.00
Northern Nig. Flour Mills	2024	2320734	10460949	8766651	1663173	9	0	10	.90	.00	1.19	.72	11.93	1.07	.00
Unilever Nigeria Plc	2015	4639690	21007814	34697653	1577300	4	1	7	.57	.14	.61	.34	4.24	.35	.09
Unilever Nigeria Plc	2016	5805045	41542547	53513389	5990506	6	2	9	.67	.22	.78	1.03	6.99	.52	.17
Unilever Nigeria Plc	2017	12949724	89958740	36695307	5935307	6	2	9	.67	.22	2.45	.46	22.06	1.63	.54
Unilever Nigeria Plc	2018	9197776	101310243	43167053	6943170	7	2	10	.70	.20	2.35	.75	23.47	1.64	.47
Unilever Nigeria Plc	2019	-11763219	71458874	34808084	-11524317	6	2	9	.67	.22	2.05	.98	18.48	1.37	.46
Unilever Nigeria Plc	2020	5655548	63979978	27798857	2401016	5	2	8	.63	.25	2.30	.42	18.41	1.44	.58
Unilever Nigeria Plc	2021	1129384	85908781	40217689	20089953	7	2	10	.70	.20	2.14	17.79	21.36	1.50	.43
Unilever Nigeria Plc	2022	7544842	103896243	55377157	12031343	7	1	10	.70	.10	1.88	1.59	18.76	1.31	.19
Unilever Nigeria Plc	2023	20259990	96079415	33797046	-3784529	6	3	10	.60	.30	2.84	-.19	28.43	1.71	.85
Unilever Nigeria Plc	2024	18360768	116274259	50847675	-2618208	8	4	11	.73	.36	2.29	-.14	25.15	1.66	.83
Union Dicon Salt	2015	273346	5750	995754	-11746	5	0	8	.63	.00	.01	-.04	.05	.00	.00
Union Dicon Salt	2016	273346	35522	821838	38681	5	0	8	.63	.00	.04	.14	.35	.03	.00
Union Dicon Salt	2017	273346	8703	873965	-12941	5	0	8	.63	.00	.01	-.05	.08	.01	.00
Union Dicon Salt	2018	273346	12667	973255	9257	5	0	8	.63	.00	.01	.03	.10	.01	.00
Union Dicon Salt	2019	273346	18583	998140	7616	5	0	8	.63	.00	.02	.03	.15	.01	.00
Union Dicon Salt	2020	273346	12744	2163888	1380	5	1	7	.71	.14	.01	.01	.04	.00	.00
Union Dicon Salt	2021	273346	14865	1384507	2022	6	2	7	.86	.29	.01	.01	.08	.01	.00
Union Dicon Salt	2022	-44959	95142	1511689	77386	5	2	6	.83	.33	.06	-1.72	.38	.05	.02
Union Dicon Salt	2023	94222	67130	1365859	-86990	5	2	7	.71	.29	.05	-.92	.34	.04	.01
Union Dicon Salt	2024	-102422	728298	2132521	591064	5	2	7	.71	.29	.34	-5.77	2.39	.24	.10

Source: Firms' Annual Reports, 2015-2024