Does Board Gender Diversity Affect Firm's Financial Performance? Evidence from Egypt

***Dalia Ibrahim*[1] and *Mohammed Hassanien*[2]**

Abstract

Given the global efforts toward promoting gender equality and diversity in corporate governance, this study investigated the relationship between board gender diversity (BGD) and financial performance (FP) in the Egyptian context, focusing on companies listed on the EGX30 index from 2018-2023. This paper examines whether increasing the number of women on boards (WOB) leads to improved FP. A binary logistic regression model was used to analyze the impact of BGD on FP as measured by Return on Assets (ROA) and Return on Equity (ROE) while controlling for other factors such as audit committee gender diversity, company size, leverage, size of the audit firm, and age of the company. Results showed that BGD has a significant positive effect on ROA, while no significant relationship exists between BGD and ROE. Conversely, gender diversity in audit committees was negatively related to ROA and ROE, suggesting that the advantages drawn from diversity may not be homogeneously distributed across different types of governance systems. These findings contribute to the business case around the value of gender diversity on corporate boards and add to the portfolio of issues they face in countries around the world when it comes to the link that exists between gender equality and the corporate governance agenda.

Keywords: Board Gender Diversity, Women on Board, Financial Performance, Profitability, Logistic Regression

ملخص:

فى ضوء الجهود العالمية الرامية إلى تعزيز المساواة بين الجنسين والتنوع في حوكمة الشركات، تناولت هذه الدراسة بحث العلاقة بين التنوع بين الجنسين في مجالس إدارة الشركات المصرية وأدائها المالي، مع التركيز على الشركات المدرجة بمؤشر EGX30 خلال الفترة (2018 – 2023). تبحث هذه الورقة فيما إذا كانت زيادة عدد السيدات في مجالس الإدارة BGD تؤدي إلى تحسين الأداء المالي للشركات. تم

[1] Assistant Professor of Accounting- Macro Economic Policies Center- Institute of National Planning (Corresponding author) - e-mail: dalia.ibrahim@inp.edu.eg

[2] Assistant Professor of Statistics- Macro Economic Policies Center- Institute of National Planning

استخدام نموذج الانحدار اللوجستي الثنائي لتحليل تأثير التنوع بين الجنسين فى مجالس إدارة الشركات BGD على الأداء المالى مقاساً بالعائد على الأصول والعائد على حقوق الملكية ، مع التحكم في عوامل أخرى مثل التنوع بين الجنسين في لجنة المراجعة، وحجم الشركة، والرافعة المالية، وحجم الشركة، شركة المراجعة وعمر الشركة. أظهرت النتائج أن BGD له تأثير إيجابي معنوي على العائد على الأصول، في حين أنه لا توجد علاقة معنوية بين BGD والعائد على حقوق الملكية. وعلى العكس من ذلك، كان التنوع بين الجنسين في لجان المراجعة مرتبطًا بشكل سلبي بالعائد على الأصول والعائد على حقوق الملكية، مما يشير إلى أن المزايا المستمدة من التنوع قد لا تكون موزعة بشكل متجانس عبر أنواع مختلفة من أنظمة الحوكمة. وتساهم هذه النتائج في تعزيز الحجة المتعلقة بقيمة التنوع بين الجنسين في مجالس إدارة الشركات وتضيف إلى مجموعة قضايا المساواة بين الجنسين وحوكمة الشركات التي تواجهها الدول حول العالم.

الكلمات الدالة: التنوع بين الجنسين في مجلس الإدارة، المرأة في مجلس الإدارة، الأداء المالي، الربحية، الانحدار اللوجستي

1. Introduction

Rapid changes in the business environment have increased the debate on the corporate board's role and effectiveness. Many countries and corporate governance codes have responded by adopting measures to improve boards' performance, placing great emphasis on diversity of experience, skills, and perspectives, including board gender diversity (BGD), to enhance better-informed decision-making and improve financial performance (KPMG, 2021).

This transformation is mainly influenced by the UN's Sustainable Development Goals (SDG), which focused on gender equality and women empowerment in SDG 5: "Achieve Gender Equality". In particular, Target 5.5 aims to ensure full and effective participation as well as equal leadership opportunities for women at all levels of decision-making in political, economic, and public life. Moreover, Indicator 5.5.2 measures the "Proportion of women in managerial positions" (UN, 2030 Agenda). In addition, several international organizations, such as the UN Women and the UN Global Compact, have supported this global movement and played an important role in advocating for gender mainstreaming and women empowerment.

Despite global efforts, the 2024 Global Gender Gap Index revealed that among the countries studied, no country has achieved complete gender parity, although significant progress has been made, where 97% of the economies included have closed more than 60% of their gap, compared to 85% in 2006 (WEF, 2024).

The global focus on gender equality has heightened attention to the representation of women on corporate boards. Many countries, particularly in Europe, have set quotas and regulatory mechanisms to foster gender diversity.

Such efforts are based on the belief that gender-diverse boards enhance company governance, performance, and economic outcomes by incorporating a broader range of skills, perspectives and experiences into decision-making (Christiansen et al., 2016 and MSCI, 2024). While empirical studies on the impact of BGD revealed mixed results, there is a growing consensus that gender-diverse boards positively influence corporate performance. Firms having more women on boards tend to show better financial performance, make more informed decisions, and generally enhance their corporate governance. These boards have a higher ability to understand stakeholder preferences, emphasize non-financial performance indicators, and reduce the likelihood of controversial business practices. Furthermore, they are associated with better financial reporting and transparency (IMF, 2019; Credit Suisse, 2019; Deloite, 2022 and KPMG, 2021).

Globally, the percentage of women on boards (WOB) has seen steady progress, with the MSCI World Index reporting an increase of 52% from 21.6% in 2018 up to 32.9% in 2023. Consistently, the MSCI Emerging Market index shows that in 2023, female directors represent 17.1% of emerging markets boards, compared to 11.2% in 2018 (MSCI, 2024). This trend reflects a broader recognition of the value women bring to corporate leadership. However, women on boards are still underrepresented, holding only 27.5% of managerial positions globally in 2022, although representing 40.1% of total employment (UN Women, 2024).

The research problem is that while there are increasing national and international voices calling for women's involvement in the economic sphere and gender equality on boards, studies on the impact of BGD on FP have reported mixed and contradictory results. While some studies suggested that firms having more female directors tend to exhibit better FP, attributed to factors such as improved risk management, enhanced innovation, and better access to capital markets, other studies found no significant relationship or have even reported a negative association.

Given the national and international pressure to increase women on company boards, the relatively unexplored relationship is important. The proposal to introduce gender quotas for boards to achieve gender diversity is contentious, and part of the justification for Doing so is the positive effect it is assumed to exert on FP. If it could be demonstrated that BGD robustly enhances FP, this would be an important validation for those who are working hard to achieve this reform.

Hence, the objective of this study is to examine the relationship between board gender diversity (BGD) and firm financial performance (FP) in the Egyptian

context, focusing on companies listed on the EGX30 index from 2018 to 2023. Using a binary logistic regression model, the research aims to determine whether BGD influences FP, as measured by Return on Assets (ROA) and Return on Equity (ROE). The study findings will contribute to the ongoing debate on the business case for gender diversity and inform policy decisions aimed at enhancing women's representation in corporate leadership.

Egypt presents a unique case in this global context, as it was the first country to align its National Strategy for Empowerment of Women 2030 with both the SDG Global Agenda and its own Vision 2030. It has set a target of 30% female representation in senior management by 2030, emphasizing promoting women's leadership roles and their representation in key positions within public institutions and companies (NCW, 2021). Over the last five years, the country has seen a dramatic evolution in institutional mechanisms to support the role of women in the political and business arenas, and the number of WOB progressed positively from 2019 to 2023 (AUC, 2024). It is then important to investigate whether this supports the business case in improving corporate outcomes to add a piece of the board gender diversity puzzle worldwide.

The rest of this paper is organized as follows: the following section sheds light on the global perspective of BGD, as well as the BGD landscape in Egypt, and section (3) discusses the literature review and hypothesis development. Section (4) introduces the empirical study, followed by the results and discussion in section (5), while section (6) concludes.

2. Board Gender Diversity: A Global Perspective and National Landscape

The issue of gender equity and diversity is gaining increased attention in international business discourse. Firms are increasingly facing social and stakeholder pressure to increase women's representation in leadership positions and provide fair and considerate treatment to all employee groups. This section sheds light on the global BGD trend and discusses the increasing business and social imperatives for it. It also underscores the Egyptian regulatory framework with regard to women's representation on boards.

2.1 Board Gender Diversity: A Global Perspective

In the last decade, the issue of board gender diversity (BGD) has received global attention due to social pressures regarding gender equality as well as the business imperative that suggests that diverse boards enhance corporate governance, performance and financial outcomes (Terjesen et al., 2015 and Catalyst, 2022).

Some countries have set regulatory requirements for gender equality. For example, in 2003, Norway took the lead in implementing a 40% gender quota on corporate boards. Similar requirements were also implemented in France, Germany, and Italy (Seierstad et al., 2017). Other initiatives like targets and disclosures have also taken place in countries like the UK and Australia, where firms adopt a "comply or explain" approach and disclose their diversity policies and progress **(**Deloitte, 2024).

Deloitte Global's latest "Women in the Boardroom report" (Deloitte, 2024) revealed that some progress has taken place towards gender parity across the globe. However, women hold less than one-quarter (23.3%) of the world's board seats, while only 8.4% of the world's boards are chaired by women, and 6% of CEOs are women. The report also highlighted that despite the number of initiatives worldwide to increase the proportion of WOB, progress isn't happening quickly enough to achieve gender parity by 2030, and accelerated momentum is required. It suggested that at the current pace, boards' gender parity might not be reached before 2038, and that a significant increase in momentum is needed to reach boardroom gender parity.

More specifically, Altrata (2023) focused on the G20 countries and pointed out that all G20 countries have improved in the number of WOB since 2014, with Ireland, Spain, Switzerland and the UK as the biggest improvers. The US ranks 13th out of the 20. Almost 33% of board directors at S&P 500 companies are females, and seven countries have below 25% female board representation, although all of these have seen an improvement.

The business imperative driving the increased interest in board diversity is grounded on the belief that diverse teams bring a wealth of perspectives improve decision-making and enhance business outcomes. Previous studies showed that firms with more diverse boards tend to have higher FP (Credit Suisse, 2021) and outperform those that are less gender-diverse (Morgan Stanley, 2023).

On the other hand, social and moral arguments consider corporate diversity as "the right thing to do, not as a means to an end". Recently, different stakeholders including investors and regulators, have extended their scope to different aspects of diversity beyond BGD. This includes gender pay gaps, representation of minorities, and female representation in senior leadership roles, supported by different regulations in countries such as the USA, UK, Japan, Canada and Australia (MSCI, 2024). Institutional investors and advocacy groups have also been pivotal in pushing for greater representation, emphasizing the business case for diversity (Catalyst, 2022).

Despite these efforts, global progress remains uneven, with regions like Asia and the Middle East lagging due to cultural and structural barriers (McKinsey & Company, 2021). However, challenges such as unconscious bias, limited pipelines of female executives, and resistance to change persist, emphasizing the need for sustained efforts to achieve equitable boardroom representation globally.

2.2 Board Gender Diversity: The Egyptian Landscape

Egypt has taken several steps to foster gender equality and to ensure more favorable conditions for women's involvement in economic growth. Egypt has ratified several international declarations on gender equality, such as the "Beijing Conference" and the "Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)". Furthermore, Egypt's 2013 constitution guarantees women's rights and lacks gender-specific restrictions. More recently, the Egyptian President endorsed *"The National Strategy for the Empowerment of Egyptian Women 2030"* in 2017, in alignment with the SDGs and "Egypt's Sustainable Development Strategy 2030". The strategy promotes women empowerment and gender mainstreaming in leadership in public institutions and companies (NCW, 2021)

To monitor the strategy's progress, the National Women Observatory was established. Moreover, the Women on Boards (WOB) Observatory was established in 2017 as a specialized observatory under the National Council for Women (NCW), with the aim of increasing women's representation on corporate boards in Egypt to 30% by 2030. The WOB annual monitoring report tracks progress in women's representation across various sectors, identifies gaps, and provides indicators to measure advancements toward the 2030 strategy's targets. The annual report covers four categories of companies; EGX-listed companies, the banking sector, the public enterprise sector, and the non-banking financial industry. Together, these initiatives reflect Egypt's commitment to SDG5, and promoting gender equality and women empowerment in both public and corporate spheres. (AUC, 2024)

Egypt 2023 Women on Boards annual monitoring report (AUC,2024) showed that the average number of WOBs in Egyptian companies is progressing. The overall Egypt WOB indicator has more than doubled in five years. It increased progressively, from 10% in 2019 to 13% in 2020, 16.7% in 2021, 19.7% in 2022, reaching 23.3% in 2023, with an average annual growth rate of 3% and a cumulative growth rate of 133%.

This progress can be attributed to the effective compliance of some regulations, where, in 2020, the FRA issued some rules promoting more board gender

equality, followed by decrees No. 109 and 110 in 2021, requiring EGX-listed companies to have 25% of women representation or at least two women on their boards. This applies to the boards of the non-banking financial sector companies, as well. Furthermore, in 2021, EGX encouraged listed companies to make disclosures on their targets of female representation and follow the Bloomberg Gender-Equality Index (GEI) reporting framework to submit their gender-related data. The Financial Regulatory Authority (FRA) also launched a Smart Application for Empowering Women, which offers a database for women of all ages who can be board members of non-banking financial companies. On the other side, banks are required by the Central Bank of Egypt to have at least two women members on their boards starting in 2021. It is worth noting that some companies and banks were already having two or more WOBs before the issuance of these rules and decisions, reflecting their belief in the necessity of BGD (AUC, 2024).

Focusing on the progress in the percentage of WOB in the EGX–listed companies, AUC (2024) showed that the companies with no WOB decreased from 53.3% in 2019 to 4.2% in 2023, whereas companies with at least 1 WOB increased from 46.5% in 2019 to 95.8% in 2023, and the rate of companies with 30% or more WOB increased from 6% in 2019 to 20.3% in 2023. This steady progress suggests that Egyptian companies are on track to meet the 2030 strategy, and even Egypt can achieve the remaining 6.7% to meet the 30% goal by 2026, 4 years before 2030.

3. Literature Review and Hypotheses Development

3.1 Theoretical framework

Current dominant theories and arguments make plausible predictions on how gender diversity might affect firm performance. Agency theory and resource dependence theory provide two perspectives that are mainly used to help explain corporate governance and provide the primary foundation for the arguments that gender-diverse boards impact firm performance. Other theories also include Stakeholder Theory, Critical Mass Theory, upper-echelon theory and Social Identity Theory. These are briefly discussed below.

Agency theory is one of the most used theories in explaining the impact of boardroom diversity on firm FP, which emphasizes the potential conflict of interest between shareholders (principals) and managers (agents) (Fuadah et al., 2022; Pulino et al., 2022; Hazaea et al., 2023; Wu et al., 2024; Abang'a et al., 2022; Gallego-A´ lvarez et al.,2010). It suggests that diverse boards can improve corporate governance, reduce agency costs, provide more effective oversight and diverse perspectives, and enhance decision-making. (Hazaea et

al., 2023; Dwaikat et al.,2021; Shleifer and Vishny, 1997; Campbell and Vera, 2010; Francoeur et al.,2008). Research has indicated that gender diversity can enhance FP, serving as an effective tool for corporate governance (Hazaea et al., 2023; Francoeur et al., 2008). It can also boost shareholder value (Campbell & Vera, 2010), improve firms' efficiency (Ramadan & Hassan, 2021), and promote better corporate social responsibility and SDG disclosure (Mazumder, 2024).

Resource Dependence Theory was also applied in the BGD studies. This theory highlights the significance of firm-specific resources and capabilities for achieving success. It posits that companies depend on valuable external resources, such as the skills, knowledge, and expertise of their board members, which can significantly impact a firm's strategic decisions and its overall continuity and survival. Therefore, a gender-diverse board can be viewed as a valuable asset, offering unique insights and perspectives that enhance decision-making and financial performance. (Barney, 1991; Freeman et al., 2018; Nguyen et al., 2020; AL Nasser, 2019; and Ramadan and Hassan, 2021). Previous research has utilized this theory to argue that connecting BGD with external factors can boost company performance while also necessitating that leaders provide resources like skills, experience, funding options, diversity, and qualifications (Arora, 2021; Assenga et al., 2018; Chen et al., 2021; Hazaea et al., 2023; and Dwaikat et al., 2021).

Stakeholder Theory highlights the need to consider the interests of all stakeholders, such as shareholders, employees, customers, and the community. When it comes to gender diversity, this theory posits that having diverse boards can enhance a company's reputation, strengthen its relationships with stakeholders, and ultimately lead to improved financial performance (Freudenreich et al., 2020; Wu et al., 2024). Gender-diverse boards bring a variety of perspectives, skills, and knowledge, which can result in better decision-making and enhanced corporate social responsibility (CSR). This, in turn, can positively influence a company's financial performance by attracting investors, boosting customer satisfaction, and improving employee morale (Jain & Zaman, 2020; Gull et al., 2018; Nadeem, 2021; Hazaea et al., 2023).

Upper-Echelon Theory posits that the traits and experiences of top management, including gender diversity, can have a significant impact on a firm's performance. Specifically, a leadership team with diverse backgrounds can offer a range of perspectives, skills, and knowledge, which can enhance decision-making, risk management, and innovation. Research indicates that gender-diverse boards can have a positive effect on a company's financial performance (Hazaea et al., 2023), and companies with a higher representation

of women on their boards often experience lower default risk (Aguir et al., 2023) and are less likely to engage in greenwashing (Birindelli & Jalal, 2024).

Critical mass theory introduces new insights into the connection between board gender diversity (BGD) and a company's financial performance (FP) (Joecks et al., 2013). It posits that a specific level of female representation on corporate boards is essential for realizing significant positive effects on firm performance. Despite its relevance, this theory has been explored in only a few studies (Hazaea et al., 2023). Research indicates that having a critical mass of women on boards can amplify the beneficial effects of BGD on FP (Wiley & Tormos, 2018) and other corporate results, including sustainable development goal (SDG) disclosure (Mazumder, 2024; Srivastava et al., 2018). Although the precise number may differ among studies, a commonly accepted benchmark is having at least three female directors, which could enhance the firm's FP (Ben Slama et al., 2019).

In contrast to earlier theories that support BGD and highlight its positive effects on firms' financial performance, Social Identity Theory offers a different perspective. It provides a framework for understanding the internal conflicts that may arise from BRD, which can adversely affect financial performance (Wu et al., 2024; Wiley & Tormos, 2018). This theory assumes that people often form social groups based on shared traits, which can influence group dynamics and decision-making processes (Williams & O'Reilly, 1998). When applied to gender diversity, Social Identity Theory sheds light on the challenges that diverse teams might encounter, such as disagreements, disharmony, heightened conflict, and diminished communication. These issues can obstruct effective decision-making and collaboration, ultimately reducing efficiency and leading to adverse performance outcomes (Srivastava et al., 2018). Considering these potential challenges, the rise in BRD due to regulatory pressures could have a negative impact on a firm's FP. Nevertheless, studies utilizing Social Identity Theory have shown that women possess qualities that can enhance performance (Hazaea et al., 2023).

While these theories are often applied separately, they can also be combined to shed light on this relationship. Researchers suggest that integrating these theories shows how gender diversity can have a positive effect on a firm's financial performance. A diverse board can enhance decision-making, improve risk management, and bolster a company's reputation. In the end, this can result in greater profitability and long-term sustainability.

3.2 Literature Review

In recent decades, the relationship between BGD and FP has gained significant interest from academics, practitioners, policymakers and international organizations. As the global interest towards diversity and inclusion in organizations has significantly increased, understanding how BGD impacts corporate outcomes and financial performance has gained much importance. A growing number of studies focused on this relationship in different contexts, yielding mixed results.

On one hand, proponents of gender equality believe that increasing corporate board gender diversity will enhance board effectiveness by bringing various perspectives, skills, and networks to the boardroom, which in turn improves decision-making and enhances its financial outcomes. On the other hand, the opponents of increasing female representation on boards argue that the link between BGD and FP is spurious at best and unfounded at worst. This section discusses key related studies that investigate the impact of gender diversity on different aspects of FP and corporate outcomes. A summary of the most recent previous literature is summarized in Table (1) and Table (2).

Table (1): Summary of the recent literature review in the International Context

Researchers	Country /Sample	Objectives (Examining/ Investigating)	Results
Alexeyeva (2024)	**Sweden** Sample of 8,095 companies	- The impact of board composition on the timeliness of financial reporting	- More gender-diverse boards tend to file their accounts in a timely fashion.
Abdelkader et al. (2024)	**South Africa** Non-financial listed firms (JSE) (2015- 2020)	- The mediating role of short-term orientation (SHRT) in the BGD-ESG relationship.	- BGD has a negative impact on ESG, with SHRT mediating this association.
Lopez et al. (2024)	**Spain** 27 IBEX 35 companies (2018–2021)	- The relationship between gender diversity in steering committees (SC) and senior management positions and the firm's stock return.	- There is a positive relationship between stock returns and the % of women on SC. - There is no sig. effect between category distribution of female directors and stock returns.
Yarram and Adapa (2024)	**Australia** (ASX) 300 Index (2004-2016)	- The association between gender diversity and business performance across sectors and economic cycles.	- BGD does not impact business performance. - BGD has a positive association with performance in the services and financial sectors but not in the resources sector.
Birindelli and Jalal (2024)	A sample of **EU-listed** banks (2013-2020)	- The moderating role of WOB in the relationship between greenwashing bank performance.	- Greenwashing is negatively associated with bank performance, and this relationship is moderated by

Researchers	Country /Sample	Objectives (Examining/ Investigating)	Results
			BGD.
Lakhal and Benkraiem (2024)	**France** Sample of listed companies	- The impact of leadership gender diversity (GD) on corporate and green innovation.	- GD among executives, particularly the CFO position, is associated with increased corporate and green innovation.
Mazumder (2024)	**Bangladesh** Banking companies	- The relationship between the level of SDG disclosure (SDGD) and BGD.	- BGD has a positive impact on SDGD. - At least 3 female directors are necessary to establish this relationship.
Wu et al. (2024)	**China** 494 listed firms (2018- 2022)	- The impact of (ESG) and firm FP), and the moderating role of Board room diversity (BRD).	- ESG positively impacts FP. - BRD has a negative impact on this relationship. - BGD has a positive impact on this relationship.
Ciappei et al. (2023)		- The relationship between female pervasiveness and firm-risk taking.	- Female pervasiveness is negatively associated with firm risk-taking.
Aguir et al. (2023)		- The relationship between firm financial stability and gender diversity in leadership	- Female top executives reduce firms' default risk in. close-to-default firms. - Independent female directors are more likely to increase firm's subsequent default risk.
Singh et al. (2023)	**India** 220 firms (2018–2022)	- The relationship between BGD and sustainability reporting.	- BGD positively impacts corporate sustainability disclosure.
Tawfik et al. (2023)	**GCC** 181 listed firms (2010- 2016)	- The impact of board diversity on financial reporting quality (FRQ).	- Female directors have no effect on levels of FRQ.
Ullah et al. (2022)	**China** Registered firms (2005- 2018)	- The relationship between board diversity and FRQ.	- Board diversity positively influences FRQ and corporate outcomes.
Yadav and Prashar (2022)	**India** Nifty 100 companies (NSE)	- The impact of BGD on a firm's sustainability (ESG) performance.	- BGD positively impact ESG performance. - A critical mass of 3 female directors is required for this relationship to become more favorable.
Ning et al. (2022)	**China**	- The relationship between board diversity and financial statement comparability.	- BGD is positively associated with financial statement comparability, especially in non-state-owned firms and non-crisis periods.
Zampone et al. (2022)	526 companies from 39 countries (2017 - 2020)	- The mediating role of Sustainability Com. (SC) on the BGD- SDG disclosure relationship.	- BGD positively influences SDG disclosure, and the presence of an SC mediates this relationship.
Fan et al. (2022)	**China** Chinese listed	- The impact of BGD on firm performance.	- There is a significant positive effect for BGD on FP, which is

Researchers	Country /Sample	Objectives (Examining/ Investigating)	Results
	firms		more pronounced in firms with weaker CG mechanisms.
Akhtar (2022)	**France** All non-financial firms listed on the SBF 120 index (2001-2019)	- The compliance of French listed firms to the board gender quotas and its effect on their performance	- BGD positively affects ROA, but it negatively affects Tobin's Q. However, the link between BGD and ROA becomes stronger, whereas the impact of BGD on Tobin's Q turns positive in the post-quota period. - Female directors in monitoring positions improve ROA & Tobin's Q, while female inside directors reduce firm profitability, which is even strengthened in the post-quota period.
Ozdemir et al. (2021)	A sample of 1,234 (2009–2013)	- Investigating the moderating effect of board diversity on the relationship between CSR performance and FP	- The relationship between CSR and FP depends on the board's diversity level.
Torres et al. 2021)	**Chile** Listed firms (2015-2020)	- The relationship between board composition diversity and firms' FP	- BGD has a positive impact on FP in the real estate and construction sectors, while a negative impact in the commerce sector and manufacturing industry.
Hassan et al. (2020)	**Malaysia** 205 companies listed on Bursa Malaysia	- The relationship between BGD, FP and CSR disclosure.	- BGD does not influence companies' FP nor its level of CSR disclosure.

Source: Prepared by the researchers

Table (2): Summary of the recent literature review in the Egyptian Context

Researchers	Sample	Objectives	Results
Ahmed et al. (2024)	A sample of Egyptian banks (2018-2022)	- The moderating role of BGD on the relationship between audit committee (AC) characteristics and FP.	- AC gender diversity has a sig. positive impact on ROA and ROE. - There is a positive effect for BGD on the relationship between AC characteristics and FP.
Abdel-Meguid et al.(2024)	(EGX100) for a period of 6 years	- Whether BGD is associated with audit fees.	- Audit fees are associated with BGD,
Elsayed (2023)	(EGX100) (2017- 2021)	- whether BGD enhances firms' performance during times of crises and uncertainty related to Covid-19.	- BGD positively impacts ROA but doesn't impact Tobin's Q. - BGD positively impacts ROA during COVID-19, but not before it.

Hammouda (2023)	ESG index (2016.-2021)	- The impact of BGD on the relationship between ownership structure and firm performance.	- BGD moderates the positive relationship between ownership structure and FP.
Noureldin (2023)	120 EGX listed companies (2012 - 2019)	- The effects of CG characteristics and gender diversity on dividend decisions and the moderating effect of ESG.	- There is a positive relationship between GD and dividend decisions, and it is moderated by ESG.
Ramadan and Hassan (2021)	Firms listed on EGX (2014- 2016)	- The impact of corporate governance mechanisms on firms' performance.	- BGD positively influences firms' efficiency.
Abdelzaher & Abdelzaher (2019)	114 non-financial listed companies (2013)	- The impact of BGD on FP	- There is a sig. positive relationship between WOB and firm value as measured by ROE and Tobin Q
IFC (2019)	2,139 companies (private-public)	- The relationship between BGD and a firm's FP.	- GBD lead to better FP.
Ararat et al. (2017)		- The effect of GBD on FP, with the Egyptian revolution in 2011 as an exogenous shock	- Gender-diverse firms perform better when their environment becomes more complex and unpredictable.

Source: Prepared by the researchers

A growing body of evidence suggests that increased BGD can positively impact reporting behaviour and financial outcomes and that diverse groups tend to outperform their counterparts. For example, studies showed that firms having more BGD provide more timely accounts (Alexeyeva, 2024), have better stock returns and are less likely to experience severe financial distress (Adam & Ferreira, 2009; Kempf & Osthoff, 2007 and Lopez et al., 2024), are less risk-taking (Ciappei et al., 2023), better earnings quality (Aryani et al.,2024), and have stronger company performance including increased profitability and revenue growth (Credit Suisse,2016; Catalyst, 2020 and IFC, 2019; McKinsey and Company, 2015 and KPMG, 2021).

Many studies have also suggested that increasing the percentage of female directors increases firm value, which is more pronounced in firms with weaker CG mechanisms (Fan et al., 2022), and when their environment becomes more complex and unpredictable, as shown by Ararat et al. (2017) who assessed the impact of GBD on FP, with the Egyptian revolution in 2011 as an exogenous shock. Moreover, BGD as a corporate governance mechanism positively influences firms' efficiency (Ramadan and Hassan, 2021 and Dwaikat et al.,2021).

Furthermore, Ullah et al. (2023) also reported the positive impact of BGD. They showed that board diversity positively impacts financial reporting quality

and corporate outcomes, especially in non-state-owned firms and during non-crisis periods. Consistently, Ning et al. (2022) found that BGD enhances financial statement comparability, while Noureldin (2023) found a positive relationship between gender diversity and dividend decisions.

Moreover, results showed that BGD positively influences SDG disclosure (Singh et al.,2023) and that this relationship is enhanced by the existence of a sustainability Committee (Zampone et al.,2022). The same result was reported by Mazumder (2024), who supported the critical-mass theory, finding that BGD is positively associated with the SDG disclosure level, especially with the presence of a critical mass of at least 3 female directors. Similarly, the results of Yadav and Prashar (2022) supported the critical mass of at least 3 women directors in enhancing ESG performance in India.

Other related studies affirmed the positive association between BGD and various company attributes, whereas Lakhal and Benkraiem (2024) found that increasing female representation among executives, particularly in the CFO position, is associated with an increase in corporate and green innovation. Consistently, Abdel-Meguid et al. (2024) highlighted the association between WOB and audit fees, as a proxy for audit effort and audit quality in the Egyptian context.

Many studies within the field of BGD have also examined the moderating role of BGD on the relationship between different corporate attributes. For instance, Birindelli and Jalal (2024) found that female directors moderate the negative association between greenwashing and bank performance, while Ozdemir et al. (2021) suggested that the level of BGD plays a moderating role in the positive relationship between CSR and FP. Moreover, Ahmed et al. (2024) suggested that audit committee (AC) gender diversity positively impacts ROA and ROE, and this relationship is moderated by the level of BGD. Consistently, Hammouda (2023) found that BGD moderates the relationship between ownership structure and FP. Empirical evidence has also affirmed the reinforcing effect of BGD on the relationship between ESG and FP (Dong et al., 2023; Islam et al., 2022; Freeman et al., 2018; and Wu et al., 2024).

Conversely, some studies found a negative association between BGD and FP and corporate outcomes. Some studies argue that BGD is significantly negatively correlated with FP and corporate outcomes, where homogenously gendered boards outperform diverse gendered boards. For instance, Weir et al. (2002) found a significantly negative relationship between female board representation and Tobin's Q in UK boards. Also, Abdelkader et al. (2024) showed a negative relationship between BGD and ESG in South Africa. Similar

results were obtained by De Meulenaere et al. (2018), who found that gender diversity negatively impacts FP.

In contrast, a number of empirical studies found no evidence of any association between firms' BGD and their FP. For example, in the Australian context, Yarram and Adapa (2024) found that BGD does not impact business performance. however, it has a positive association with performance in the services and financial sectors but not in the resources sector. In consistence, Tawfik et al. (2023) found that female directors do not affect the levels of financial reporting quality in the GCC countries, while Hassan et al. (2020) found that BGD does not influence companies' FP, nor its of CSR disclosure level for the Malaysian listed companies. This is consistent with Terjesen et al. (2009), who found no evidence that the percentage of women in a firm influences market performance, profitability, or sales growth. The reasons for these findings include the challenge of accurately measuring FP, the potential for confounding variables, and the possibility that the effects of gender diversity could be long-term and difficult to capture in short-term performance metrics.

Other studies showed mixed results concerning different corporate behaviour and outcomes. For instance, Aguir et al. (2023) reported that close-to-default firms tend to appoint females as top executives, whose leadership decreases subsequent firms' default risk in the short to medium term. However, they found no association between independent female directors and firms' past credit risk and that even their presence might increase the firm's subsequent default risk.

Investigating the compliance of French-listed firms to the board gender quotas and its impact on their accounting and market-based performance, Akhtar (2022) found that BGD has a positive impact on ROA that becomes stronger in the post-quota period but found a negative impact on Tobin's Q that turns to be positive in the post quota period. He also found that this relationship applies to female directors in monitoring positions but not to female inside directors, which he found to reduce firm profitability.

Mixed results were also revealed by Elsayed (2023), indicating that BGD positively impacts a firm's FP (as measured by ROA) but not when measured by Tobin's Q. Furthermore, he also found that BGD positively affects FP (as measured by ROA) during the period of COVID, but not before it.

However, it might be challenging to provide an overarching conclusion given the discrepancy in results that suggest that BGD's impact might differ based on local regulations and cultural attitudes towards gender equality, leading to a

lack of generalizability. Based on the discussed theoretical viewpoints and the results of previous literature, it can be said that BGD carries many advantages such as improved decision-making, enhanced innovation, stronger risk management, increased stakeholder value, enhanced reputation, and improved FP. On the other side, disadvantages BGD include the potential for conflict, group-thinking challenges, cultural and social Barriers, and tokenism, where placing women on boards solely for diversity quotas without considering their qualifications can be counterproductive.

3.3 Hypothesis Development

The results of previous studies suggested that BGD is associated with better corporate governance, which in turn contributes to financial stability (Nielsen & Huse, 2010; Terjesen et al., 2009). They also suggest that the impact of BGD on FP can likely be influenced by several factors, including the specific characteristics of board members as well as the firm's sector, region and the broader economic environment and the cultural perspectives towards women empowerment (Miller & Triana, 2009).

Hence, this study contributes to the previous literature by trying to figure out the relationship between BGD and FP in the Egyptian context, which might add another piece to the puzzle of BGD studies worldwide. This study builds on the agency theory, stakeholders' theory, resource-dependence theory and upper-echelon theory to examine whether the proportion of female directors on the boards of Egyptian companies impacts its FP.

Hence, the research main hypothesis can be derived as follows:

H_1: *There is a significant positive relationship between Board Gender Diversity (BGD) and firm's financial performance.*

Previous studies have investigated the relationship between BGD and FP using several proxy measures. These include return on assets (ROA), return on equity (ROE), Tobin's Q, and stock performance. This study used ROA and ROE to measure a firm's financial performance.

Hence, the research main hypothesis can be divided into two sub-hypotheses as follows:

H_{1ROA}: *There is a significant positive relationship between Board Gender Diversity (BGD) and ROA.*

H_{1ROE}: *There is a significant positive relationship between Board Gender Diversity (BGD) and ROE.*

4. Research Methodology

To empirically examine the research hypothesis, the researchers used a binary logistic regression model to explore the relationship between BGD and FP in the Egyptian context.

4.1 Sample Selection and Data Sources

A binary logistic regression model has been developed to investigate whether a significant relationship exists between the extent of diversity on the board (in terms of gender) and the financial performance using data of companies listed on EGX 30 through the period (2018–2023). EGX 30 Index is the major Egyptian Stock Market Index which tracks the performance of the 30 most liquid and active traded companies. For the matter of comparability, companies reporting in US Dollars were excluded from the data sample, resulting in 28 companies and 168 firm-year observations.

Companies' accounting and financial data were obtained basically from Thomson Reuters Data Stream, while missing accounting and financial data were obtained from the companies' financial statements and annual reports published on their websites. Data on gender-related measures were extracted manually either from their annual reports or their annual corporate governance reports.

4.2 Variables and Model Specification

To test the research hypotheses and test for the relationship between the level of companies 'board gender diversity and their financial performance, the following variables were used:

4.2.1 Dependent Variables

This study used Return on Assets (ROA) and Return on Equity (ROE) to measure a firm's financial performance. Binary/dichotomy variables for both ROA and ROE are utilized in the model as the dependent variables. The definitions of these variables are presented below.

4.2.2 Independent Variables

In line with previous studies that tried to estimate the Board Gender Diversity models and study its impact on a firm's financial performance, we used the percentage of women on the board of directors as a measurement for BGD, calculated as the ratio between the number of female directors and the total number of board directors.

4.2.3 Control Variables

Some variables were included to control for firm-level and board-specific factors that are believed to impact the relationship between BGD and a firm's FP. They are included to isolate the specific impact of BGD on ROE and ROA, and avoid omitted variable bias. These include company size, leverage, age since establishment, and type of auditor. An audit performed by the Big4 may have higher reporting quality and higher financial performance. Also, consistent with Bhuiyan et al. (2020), board-specific factors, namely, the gender diversity of the audit committee, are also controlled.

Firm performance as measured by ROA and ROE is represented as a proportion (bounded between 0 and 1). To identify the effect of the independent and control variables on the likelihood of being among the top-performing companies in terms of ROA and ROE, **the general binary logistic regression model can be derived as follows:**

$$\log\left(\frac{p}{1-p}\right) = \boldsymbol{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + \ldots e}$$

Where,

P: is the outcome of the dependent variable under study.

$\log\left(\frac{p}{1-p}\right)$: represents the log odds of the dependent variable. Such log-odds transformation is used to linearize the relationship between the dependent outcome and the independent variables.

$\boldsymbol{\beta_0, \beta_1, \ldots, \beta_n}$: are the coefficients of the independent variables in the model $x_0, x_1, \ldots, x_n$.

$\boldsymbol{e}$**:** represents the random error term.

As this study employs Return on Assets (ROA) and Return on Equity (ROE) as proxies for financial performance, the model can be expressed as follows:

For ROA:

$$\boldsymbol{log\left(\frac{P_{ROA}}{1 - P_{ROA}}\right) = \beta_0 + \beta_1\, BGD + \beta_2\, ACGD + \beta_3\, SIZE + \beta_4\, LEV + \beta_5\, AGE + e}$$

Where,

$\boldsymbol{P_{ROA}}$: is the probability of being in the top-performing companies in terms of ROA.

$\boldsymbol{log\left(\frac{P_{ROA}}{1-P_{ROA}}\right)}$**:** represents the log-odds of ROA.

$\boldsymbol{e}$**:** represents the random error term.

For ROE:

$$\boldsymbol{log\left(\frac{P_{ROE}}{1-P_{ROE}}\right) = \beta_0 + \beta_1 BGD + \beta_2 ACGD + \beta_3 SIZE + \beta_4 LEV + \beta_5 AGE + e}$$

Where,

$\boldsymbol{P_{ROE}}$: is the probability of being in the top-performing companies in terms of ROE.

$\boldsymbol{log\left(\frac{P_{ROE}}{1-P_{ROE}}\right)}$: represents the log-odds of ROE.

$\boldsymbol{e}$**:** represents the random error term.

These equations demonstrate how various factors can contribute to the probability of being top performers in terms of ROA and ROE, emphasizing the importance of BGD, ACGD, SIZE, LEV, and AGE in driving success.

Table (3) presents the definitions and measurements of the variables used in the model.

Table (3): Study Variables explanation and measurement

Variables	Measurement/Explanation
Dependent Variable	
Financial Performance (FP)	
ROA	A binary variable takes (1) if the company's ROA is higher than the third quartile; (0) otherwise.
ROE	A binary variable takes (1) if the company's ROE is higher than the third quartile ; (0) otherwise
Independent Variables	
Board Gender Diversity (BGD)	Number of female directors/ Total number of BOD members
Control Variables	
Audit Committee Gender Diversity (ACGD)	Number of females in the Audit Committee/ Total number of Audit Committee members
Company Size (SIZE)	Natural logarithm of total assets

Leverage (LEV)	Total Liabilities/ Total Assets
Audit Firm size (BIG4)	A dummy variable: Big 4 Audit Company (1), otherwise (0)
Age of the company (AGE)	Number of years since the firm was established

5. Results and discussion

The researchers analyzed the data set using the Statistical Package for Social Sciences (SPSS), and the descriptive analysis and empirical results are presented below.

5.1 Descriptive Analysis

The main descriptive statistics for the study variables are presented in Table (4). This includes financial performance metrics (ROA, ROE), governance-related variables (BGD, ACGD), firm characteristics (Size, LEV, BIG4, Age), and their respective descriptive statistics.

Table (4): Descriptive statistics for the study variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA	168	-12.51	67.99	13.3593	14.79905
ROE	168	-246.32	88.87	25.2579	34.05816
BGD	168	.00	50.00	13.3382	9.36112
Size	168	20.8058	27.4505	23.568305	1.4517196
ACGD	168	.00	66.67	11.9600	15.67099
LEV	168	5.67	120.95	60.0554	24.10804
BIG4	168	0	1	.53	.501
Age from Foundation	168	10	170	44.61	34.509
Valid N (listwise)	168	-	-	-	-

For the financial performance metrics, the wide range and high standard deviation of **ROA** indicate significant variability across the sample, where some firms experienced losses, while others experienced high profitability. However, the mean ROA (13.36) is positive, indicating that, on average, firms are profitable. On the other hand, the **ROE** range is extremely wide, and its high standard deviation suggests significant variability, which can be attributed to differences in firms' leverage, profitability, or financial structure. However,

although the mean ROE (25.26) is positive, extreme negative values may indicate outliers or firms with severe financial distress.

For governance-related variables, the mean of BGD suggests that, on average, boards have low gender diversity. However, some firms have achieved gender parity, while others have no female board members. Consistently, the mean of the ACGD variable (11.96%) is low, indicating limited gender diversity in audit committees, while the high standard deviation (15.67%) suggests significant variability across firms.

Analyzing the results of the firm-specific variables, SIZE shows a relatively low standard deviation (1.45), as the EGX 30 firms in the sample are relatively similar in size, with moderate variability. The mean LEVERAGE (60.06%) indicates that firms have, on average, moderate to high leverage. The wide range and high standard deviation (24.11%) suggest significant differences in capital structure across firms. The descriptive analysis for the data set also shows that approximately 53% of firms in the sample are audited by a BIG4 firm, while the AGE of firms in the sample varies widely, from relatively young (10 years) to very old (170 years). The high standard deviation (34.51) indicates significant variability in firm age.

In general, most variables exhibit significant variability, as indicated by their wide ranges and high standard deviations. This may be attributed to differences in industry or firm-specific factors. Both BGD and ACGD have low means, indicating limited gender diversity in boards and audit committees across the sample. Firms in the sample are relatively similar in size but differ significantly in terms of leverage, age, and financial performance.

5.2 Statistical Analysis

5.2.1 The association between BGD and FP, as measured by ROA

As indicated, this part is concerned with estimating a binary logistic regression model to identify the impact of BGD on the ROA of (EGX 30) companies. The dependent variable is a dichotomous variable indicating whether a company is among the top-performing companies in terms of ROA or not. Specifically, a company would be considered in the top performing companies if its value of ROA is greater than or equal to the value which corresponds to the third quartile of ROA in the sample (i.e. the value which about 75% of the observations are less than it, and 25% of the observations are higher than it).

The correlation matrix among the variables was examined, indicating no high correlation among the independent variables, as shown in Appendix (1).

As shown in Table (5), and Table (6), the estimation results indicate that the estimated model is significant at (0.000. Moreover, Nagelkerke's R2 suggests that about 58% of the variation in the likelihood of being among the top-performing companies can be attributed to the independent variables in the model. Moreover, the per cent of correct classification was 90.4%, indicating that the model is high capable of correctly predicting the observations based on their characteristics.

Table (5): Significance of the Estimated Model

		Chi-square	df	Sig.
Step 1	Step	40.596	6	.000
	Block	40.596	6	.000
	Model	40.596	6	.000

Table (6): Estimated Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	45.174[a]	.351	.586

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Regarding the goodness of fit for the model, the Hosmer-Lemeshow test in Table (7) indicates that the estimated model is a good fit for the data (Chi-square = 5.439, df = 6, p = .710). In other words, this means that there is no significant difference between the observed and predicted model.

Table (7): Hosmer and Lemeshow Test for Goodness of fit for the model

Step	Chi-square	df	Sig.
1	5.439	6	.710

Table (8) presents the results of the estimation for the marginal effect and associated significance for each of the independent variables as follows:

Table (8): Estimation Results of the Model

	B	S.E.	Wald	df	Sig.	Exp(B)
BGD	.184	.067	7.601	1	.006	1.202
$ACGD$	-.141	.046	9.439	1	.002	.869
$SIZE$	-.929	.508	3.342	1	.068	.395
LEV	.093	.035	7.107	1	.008	1.098
$BIG4$	-1.686	1.206	1.955	1	.162	.185
AGE	-.064	.027	5.624	1	.018	.938
$Constant$	12.985	9.909	1.717	1	.190	435698.787

a. Variable(s) entered on step 1: $BGD, ACGD, SIZE, LEV, BIG4, AGE$

According to the empirical results, the estimated equation could be expressed as follows:

$$\log\left(\frac{\widehat{P_{ROA}}}{1-\widehat{P_{ROA}}}\right) = 12.9 + 0.18\,BGD - 0.14\,ACGD - 0.92\,SIZE + 0.09\,LEV - 0.64\,AGE$$

The results showed that BGD has a positive impact on ROA. Specifically, BGD has a positive effect on the odds of being in the ROA top-performing companies, where increasing the percentage of females on the board by one per cent increases the odds of being among the ROA top-performing companies by 20% at the level of significance (0.006). This result supports the business case for diversity, emphasizing that diverse boards bring varied skills and perspectives, leading to better financial performance and improved decision-making.

Conversely, ACGD's negative coefficient (−0.14) indicates that greater gender diversity on the audit committee may have a negative impact on ROA. Increasing the percentage of females in the audit committee by 1% decreases the odds of being among the top ROA-performing companies by 13% at the significance level of (0.002). This result supports the social identity theory, suggesting that diversity might introduce complexities or delays in decision-making in audit committees. This might be due to the unique role of the audit committee in overseeing financial reporting and compliance, which differs from the overall board management and oversight function.

The results regarding company size indicated that it is negatively associated with ROA. A one-unit increase in company size decreases the odds of being among the ROA—top-performing companies by 60% at the level of significance (0.068). This suggests that larger firms may have lower ROA, possibly as a result of higher operational complexity or inefficiencies.

Consistent with previous literature, the results showed that the company's leverage is positively associated with ROA. A one-unit increase in the company's leverage increases the odds of being among the top-performing

companies by 10% at the level of significance (0.008). This implies that higher leverage has a positive impact on ROA, possibly because debt financing can amplify returns when used effectively.

Moreover, results indicated that the age of the firm has a significant negative impact on its ranking among the top-performing companies, whereas older firms may have lower ROA. Specifically, a one-year increase in the company's age decreases the odds of being among the top-performing companies by 6% at significance (0.018). This is potentially due to outdated practices or the reduced agility of older firms. However, being audited by one of the big four auditing firms had no significant effect on being among the top ROA-performing companies.

The findings support policies promoting gender diversity on corporate boards, as it appears to enhance financial performance (ROA). However, the negative impact of ACGD suggests that the role of diversity may vary across different governance structures. Firms should carefully consider the composition of their audit committees to balance diversity with efficiency.

5.2.2 The association between BGD and FP, as measured by ROE

This section presents the estimation of a binary logistic regression model to identify the effect of BGD on the ROE of the companies in our sample. Like ROA, the dependent variable in this model is a dichotomous variable, indicating whether a company is among the top ROE-performing companies. Specifically, a company would be considered in the top performing companies if its ROE value is greater than, or equal to, the value which corresponds to the third quartile of ROE in the sample i.e. the value which 75% of the observations are less than, and 25% of the observation are higher than it. The correlation matrix among the variables was examined, and no high correlation among the independent variables was observed, as shown in Appendix (1).

As shown in Table (9), and Table (10), the estimation results indicate that the estimated model is significant (0.000). Moreover, Nagelkerke's R2 indicates that about 71% of the variation in the likelihood of being in the top-performing companies can be attributed to the independent variables of the model. Moreover, the percentage of correct classification was 94%, which means the model had a high ability to predict the observations based on their characteristics correctly.

Regarding the goodness of fit for the model, Hosmer-Lemeshow test in Table (11) indicates that the estimated model could be considered at 0.01 level of significance. (Chi square = 16.599, df = 6, p = .0.35).

Table (9): Significance of the Estimated Model

		Chi-square	df	Sig.
Step 1	Step	48.597	8	.000
	Block	48.597	8	.000
	Model	48.597	8	.000

Table (10): Estimated Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	30.524[a]	.404	.709

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Table (11): Hosmer and Lemeshow Test for Goodness of fit for the model

Step	Chi-square	df	Sig.
1	16.599	6	.035

Table (12) presents the results of the estimation for the marginal effect and

Table (12): Estimation Results of the Model

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	*BGD*	.136	.083	2.670	1	.102	1.145
	ACGD	-.097	.042	5.280	1	.022	.908
	SIZE	-.976	.581	2.823	1	.093	.377
	LEV	.080	.042	3.617	1	.057	1.083
	BIG4	-.728	1.620	.202	1	.653	.483
	AGE	-.081	.037	4.698	1	.030	.922
	Constant	19.895	11.587	2.948	1	.086	436660462.458

a. Variable(s) entered on step 1: $BGD, ACGD, SIZE, LEV, BIG4, AGE$

associated significance for each of the independent variables below:

According to the results, the equation could be expressed as follows:

$$\log\left(\frac{\widehat{P_{ROE}}}{1-\widehat{P_{ROE}}}\right) = 19.8 - 0.097\,ACGD - 0.97\,SIZE + 0.08\,LEV - 0.81\,AGE$$

Results indicated that BGD has no significant effect on the odds of being among the top ROE-performing companies. This result is consistent with prior literature (e.g., where BGD is found to have a significant impact on ROA while having no significant effect on ROE). Similar results were reported by several studies (e.g., Dwaikat et al., 2021),

Like the case of ROA, the coefficient −0.097 of ACGD suggests that greater gender diversity on the audit committee may have a negative impact on ROE. Increasing the percentage of females in the audit committee by one per cent decreases the odds of being among the top ROE-performing companies by 11% at the level of significance (0.022). This could reflect challenges such as slower decision-making, conflicts, or differing risk appetites and perspectives in the audit committee. However, this interpretation requires further investigation, as the relationship between diversity and performance can be complex and context-dependent.

Results also showed that larger firms may have lower ROE. Increasing the company size by one unit decreases the odds of being among the top-performing companies by 62% at a level of significance (0.093). Such a result can possibly be due to higher operational complexity, inefficiencies, or diminishing returns to scale. On the other hand, results indicated that higher leverage has a positive impact on ROE. Increasing the company's leverage by one unit increases the odds of being among the top ROE-performing companies by 8% at the level of significance (0.057). This supports the idea that debt financing can amplify returns when used effectively (assuming the cost of debt is lower than the return on investment).

This model reported the same results for AGE, indicating that a company's age significantly negatively affects its chances of being among the top-performing companies in terms of ROE. Increasing a company's age by one year decreases its odds of being among the top ROE-performing companies by 8% at a level of significance (0.03). This suggests that older firms may have lower ROE, potentially due to outdated practices, reduced agility, or market saturation. Moreover, similar to the case of ROA, being audited by one of the Big4 auditing firms has no significant effect on being among the top ROE-performing companies.

The results for other control variables (size, leverage, and age) align with the theoretical basis, which assumes that larger firms may face inefficiencies or

diminishing returns, that higher leverage can amplify returns if used effectively, and that older firms may face innovation or market saturation challenges.

5.3 Discussion

The findings of this study add to the discussion about the benefits of gender diversity in corporate governance and show how BGD affects financial results in Egypt. The study finds that BGD has a strong positive effect on ROA. Hence, the first sub-hypothesis can be accepted, supporting the argument for diversity in business. This aligns with earlier research, such as Dwaikat et al. (2021), which claims that boards with gender diversity offer different viewpoints, improve decision-making, and boost financial performance. The findings support resource dependency theory and agency theory, which suggest that diverse boards can better oversee management and utilize a broader range of resources, resulting in better financial outcomes.

The study shows a significant negative relationship between gender diversity in audit committees (ACGD) and ROA. This is in contrast to the positive relationship found with BGD and may indicate the specific function of audit committees in managing financial reporting and compliance. The negative link may be due to issues like slower decisions, disagreements from different views, or varied risk preferences among members. This finding supports social identity theory, which indicates that diversity can occasionally create difficulties that disrupt group unity and efficiency.

Conversely, BGD does not have a significant impact on ROE, which contrasts with its positive effect on ROA. Hence, the second sub-hypothesis cannot be accepted. This result may be due to the different ways through which ROA and ROE measure financial performance. ROA reflects operational efficiency and asset utilization, while ROE is influenced by leverage and equity structure. The lack of a significant relationship between BGD and ROE suggests that gender diversity may have a more pronounced effect on operational performance than on shareholder returns. This finding is consistent with prior studies, such as Catalyst (2022) which found that gender diversity significantly impacts ROE but not necessarily ROA, highlighting the context-dependent nature of these relationships.

The results have important ***theoretical implications*** for resource dependency and agency theory. The positive relationship between BGD and ROA supports the argument that diverse boards enhance resource acquisition and utilization and improve monitoring and governance. However, the negative relationship between ACGD and ROA challenges the assumption that diversity uniformly benefits all governance structures. This assumes that the impact of gender

diversity might differ based on the role and function of the governance body concerned.

The findings also emphasize the importance of social identity theory in grasping the dynamics of gender diversity within audit committees. The negative correlation between ACGD and ROA might indicate the difficulties of incorporating diverse viewpoints in an environment that demands strong coordination and agreement, like financial oversight. This emphasizes the importance of exploring how diversity influences decision-making processes in different governance contexts.

These findings have ***practical implications*** suggesting that enhancing BGD can enhance FP, particularly in terms of operational efficiency (ROA). Policymakers and corporate leaders in Egypt and similar emerging markets should consider adopting policies that promote women's representation on boards, such as gender quotas or diversity targets. However, the negative relationship between ACGD and ROA suggests that diversity initiatives should consider the specific governance structure. For example, while increasing gender diversity on boards may be beneficial, firms should carefully consider their audit committees' composition to ensure that diversity does not hinder their effectiveness.

The study emphasizes the significance of firm-specific factors like size, leverage, and age in influencing financial performance. It appears that larger and older firms often experience lower ROA and ROE, indicating they might encounter issues related to operational complexity, inefficiencies, or market saturation. To address these challenges, firms should prioritize enhancing their operational agility and fostering innovation. Furthermore, the positive correlation between leverage and FP indicates that firms can gain advantages from strategically utilizing debt financing.

6. Conclusion

This paper examined the relationship between board gender diversity (BGD) and financial performance (FP) in the Egyptian context, focusing on companies listed on the EGX30 through the period (2018- 2023. It applied a binary logistic regression model to assess how BGD influences two important financial metrics: ROA and ROE. These findings, therefore, represent an issue that has theoretical and practical implications for policymakers, corporate leaders, and stakeholders.

The results indicated that BGD has a positive impact on ROA, hence accepting the hypothesis that gender-diversified boards contribute to better financial

performance. This, therefore, supports the business case for diversity, where greater diversity on the board means more voices, better decision-making, and better governance, eventually leading to better performance. However, there was no significant relationship between BGD and ROE; hence, it could be concluded that the effect of gender diversity might depend on the financial performance measure used. Surprisingly, the study found that ACGD negatively influenced both ROA and ROE. This denotes that diversity does not uniformly benefit all corporate governance aspects and thus requires further research into the specific dynamics of audit committees. It might indicate that the different responsibilities an audit committee has, such as financial oversight and compliance, require a different approach to diversity to avoid possible conflicts or inefficiencies.

Factors such as firm size and age also play a role in financial performance (FP). Generally, larger and older firms show lower returns on assets (ROA) and equity (ROE), which could be attributed to operational complexities, inefficiencies, or outdated methods. Conversely, higher leverage is linked to better FP, likely because effectively using debt financing can enhance returns. These insights indicate that it's important to take firm-specific characteristics into account when assessing how governance practices affect financial results.

The study's findings justify the inclusion of gender diversity into the corporate board to improve FP, especially at the ROA level. However, the insignificant results about ROE and the negative impact of diversity in audit committees showed that the relationship between diversity and performance is complex and contextual. It is hoped that such nuance informs the policymakers and corporate leaders in the design and implementation of policies on diversity, striving to make them fit the specific needs and dynamics of their organizations.

While this study has its theoretical and practical implications, it also has some limitations. The study was limited to the EGX 30 companies. Future studies can broaden the sample and include more companies to provide more insights into this relationship, as well as improve the validity of the results. Future studies can build on these findings to further explore the mechanisms through which BGD influences FP and inform evidence-based policies aimed at promoting diversity in corporate governance. Moreover, future studies can also examine the impact of gender diversity on corporate outcomes in different board committees and at different managerial levels.

It can be concluded that achieving gender diversity in the composition of corporate boards is not only a matter of social justice and equality but also a strategic imperative for strengthening corporate governance and financial performance. The empirical evidence in this study underlines Egypt's efforts to

meet the SDG5 and its 2030 targets for gender diversity and highlights further areas for exploration and improvement.

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Appendix

Table (1): Correlation Matrix for ROA and other Independent Variables in the Model

		ROA*	AGE	BIG4	SIZE	BGD	LEV	ACGD
ROA*	Pearson Correlation	1	-.132	.011	-.132	.020	.075	-.255**
	Sig. (2-tailed)		.088	.883	.088	.800	.334	.001
	N	168	168	168	168	168	168	168
AGE	Pearson Correlation	-.132	1	-.087	.201**	-.158*	.011	-.119
	Sig. (2-tailed)	.088		.264	.009	.041	.885	.123
	N	168	168	168	168	168	168	168
BIG4	Pearson Correlation	.011	-.087	1	.398**	.093	.406**	-.155*
	Sig. (2-tailed)	.883	.264		.000	.231	.000	.045
	N	168	168	168	168	168	168	168
SIZE	Pearson Correlation	-.132	.201**	.398**	1	-.021	.480**	.073
	Sig. (2-tailed)	.088	.009	.000		.787	.000	.345
	N	168	168	168	168	168	168	168
BGD	Pearson Correlation	.020	-.158*	.093	-.021	1	.088	.559**
	Sig. (2-tailed)	.800	.041	.231	.787		.258	.000
	N	168	168	168	168	168	168	168
LEV	Pearson Correlation	.075	.011	.406**	.480**	.088	1	.156*
	Sig. (2-tailed)	.334	.885	.000	.000	.258		.044
	N	168	168	168	168	168	168	168
ACGD	Pearson Correlation	-.255**	-.119	-.155*	.073	.559**	.156*	1
	Sig. (2-tailed)	.001	.123	.045	.345	.000	.044	
	N	168	168	168	168	168	168	168

Table (2): Correlation Matrix for ROE and the Independent Variables in the Model

		ROE*	AGE	BIG4	SIZE	BGD	LEV	ACGD
ROE*	Pearson Correlation	1	-.114	.000	-.125	.033	.101	-.174*
	Sig. (2-tailed)		.141	.996	.107	.669	.192	.024
	N	168	168	168	168	168	168	168
AGE	Pearson Correlation	-.114	1	-.087	.201**	-.158*	.011	-.119
	Sig. (2-tailed)	.141		.264	.009	.041	.885	.123
	N	168	168	168	168	168	168	168
BIG4	Pearson Correlation	.000	-.087	1	.398**	.093	.406**	-.155*
	Sig. (2-tailed)	.996	.264		.000	.231	.000	.045
	N	168	168	168	168	168	168	168
SIZE	Pearson Correlation	-.125	.201**	.398**	1	-.021	.480**	.073
	Sig. (2-tailed)	.107	.009	.000		.787	.000	.345
	N	168	168	168	168	168	168	168
BGD	Pearson Correlation	.033	-.158*	.093	-.021	1	.088	.559**
	Sig. (2-tailed)	.669	.041	.231	.787		.258	.000
	N	168	168	168	168	168	168	168
LEV	Pearson Correlation	.101	.011	.406**	.480**	.088	1	.156*
	Sig. (2-tailed)	.192	.885	.000	.000	.258		.044
	N	168	168	168	168	168	168	168
ACGD	Pearson Correlation	-.174*	-.119	-.155*	.073	.559**	.156*	1
	Sig. (2-tailed)	.024	.123	.045	.345	.000	.044	
	N	168	168	168	168	168	168	168