

Internal Audit, Board of Director and Environmental, Social, and Governance (ESG) Disclosure among Public Listed Companies in Malaysia

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Abstract

This study examined ESG disclosure among Public Listed Companies (PLCs) in Malaysia for 2022, with three objectives: measuring ESG disclosure levels, assessing links between internal audit and board dimensions, and identifying key variables affecting ESG disclosure. Data from annual reports covering 241 companies on Bursa Malaysia's Main Market (2020-2022) were analysed, with 148 companies meeting ESG reporting criteria and disclosure levels assessed via a Dichotomous Method Index. Findings revealed that most companies achieved high levels of environmental, social, and governance transparency. Positive relationships were observed between ESG disclosure and internal audit factors (independence, incentives, efficiency) and board variables (size, independence, leadership structure). Internal Audit Efficiency emerged as the most influential variable, reinforcing its role in transparency, with Leadership Structure also showing a positive impact. Using Agency Theory, this study underscored the importance of internal audit effectiveness and governance structures in promoting robust ESG disclosure. Recommendations include enhancing corporate commitment to ESG transparency, improving audit processes, and establishing clear governance structures. Emphasis on the Dichotomous Method Index highlighted the systematic measurement of disclosure, providing valuable insights for policy improvements and sustainable practices.

Keywords: Environmental, Social, and Governance (ESG); Internal Audit; Board of Directors; Public Listed Company; ESG Disclosure

INTRODUCTION

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In the realm of corporate governance, the landscape of disclosure practices among publicly listed companies in Malaysia garnered increasing attention in scholarly circles. Past research, as elucidated by scholars such as Jennings (1987) and Okafor & Ogiedu (2011), underscored the critical role of disclosures in fostering investor confidence and mitigating information asymmetry. Notably, the focus shifted towards Environmental, Social, and Governance (ESG) disclosures, reflecting a global trend towards sustainable business practices. However, recent studies, including those by Jonsdottir et al. (2022) and Ahmad et al. (2023),

highlighted significant challenges in ESG reporting, ranging from issues of relevance and accuracy to the potential for whitewashing and lack of comparability. These challenges intersected with the domains of internal audit and the board of directors, pivotal actors in ensuring transparency and accountability within organizations.

Internal audit functions within Malaysian companies faced a multifaceted challenge in navigating the complexities of ESG disclosure. Moon (2023) posited that internal auditors had to balance the divergent priorities of stakeholders, including shareholders' focus on short-term financial gains and broader societal expectations for social and environmental responsibility. This complexity necessitated a nuanced approach to audit prioritization and a keen understanding of the interplay between financial performance and ESG metrics. Moreover, with Bank Negara Malaysia's (2024) recent announcement of climate risk stress testing for banks, internal auditors were tasked with integrating ESG criteria into audit processes to assess and mitigate climate-related risks effectively.

BACKGROUND OF ESG

Boards of directors played a crucial role in shaping the Environmental, Social, and Governance (ESG) agenda within Malaysian companies. Sunarti et al. (2022) highlighted the importance of board diversity in fostering a comprehensive understanding of ESG issues and promoting sustainable practices. However, previous research indicated a lack of diversity on boards, which impeded effective oversight and exposed companies to risks. Lee (2023) emphasised the pressure on boards to demonstrate transparent governance practices regarding ESG matters, necessitating improved oversight and robust governance frameworks aligned with sustainability goals.

This scenario prompted the need for closer coordination between internal audit functions and boards of directors to enhance ESG disclosure practices in Malaysian companies. Wilowski (2023) noted the knowledge gap among board members concerning ESG regulations, advocating for collaboration with internal auditors to bridge this divide. Findings from Dr. Negin Vaghefi's (2023) report underscored the necessity of strong internal controls and data management systems to ensure accurate ESG disclosures. By fostering synergy between internal audit processes and board

oversight, Malaysian companies could strengthen ESG transparency and contribute to sustainable business practices.

The research objectives aimed to tackle critical issues surrounding ESG disclosure practices among Malaysian Public Listed Companies (PLCs) in 2022. The first objective sought to measure the level of ESG disclosure among PLCs, recognising that transparent disclosures are vital for informed investment decisions. Scholars like Okafor and Ogiedu (2011) emphasised the need for credible disclosures to reduce information asymmetry between companies and investors, highlighting the necessity to evaluate PLCs' adherence to ESG reporting standards.

The second objective investigated the relationship between internal audit practices, board dynamics, and ESG disclosure. This objective acknowledged the essential roles of internal auditors and boards in overseeing corporate governance and sustainability practices. Ahmad et al. (2023) pointed out complexities in assessing corporate governance effectiveness, indicating the need to explore the influence of internal audit and board dynamics on ESG disclosure.

Finally, the third objective aimed to identify the most influential variables shaping ESG disclosure practices among Malaysian PLCs. By examining factors such as internal audit independence, incentives for internal auditors, board size, board independence, and leadership structure, the study aimed to provide insights into the mechanisms driving ESG disclosure decisions, enhancing corporate governance and sustainability practices in Malaysia. The study's conclusions promised to enlighten PLCs, offering insights to improve ESG disclosure procedures and navigate governance challenges effectively.

LITERATURE REVIEW

Environmental, Social, and Governance (ESG) Disclosure

ESG reporting, while less standardised than financial reporting, has gained importance for investors by showcasing a company's commitment to sustainability. Companies adhering to ESG principles tend to demonstrate stronger governance and environmental stewardship, attracting cost-effective investment opportunities. In Malaysia, the FTSE4 Good Bursa Malaysia Index encourages responsible investment,

highlighting Malaysia's steady ESG progress in ASEAN (Kuen, 2022). However, challenges remain in improving transparency and aligning internal audits to strengthen ESG credibility, with comparability issues and costs impacting implementation (Rahman & Post, 2012). Scholars suggest that comprehensive ESG metrics, such as the dichotomous index, provide valuable assessments, with scores ranging from 0 to 100 to reflect performance levels effectively (Hayes, 2023).

i. ESG 1st Pillars: Environmental (E) Disclosure

Environmental disclosure is central to ESG practices, showcasing efforts to reduce environmental impact and promote resource efficiency (Khanchel & Lassoued, 2022). Beyond compliance, companies engaging in environmental disclosure aim to enhance reputation, drive innovation, and promote sustainability. Transparent environmental reporting correlates with improved ESG performance, fostering environmental stewardship (Wang, Yu, & Li, 2022). Nonetheless, Zhao et al. (2023) observed a lack of standardised frameworks, making cross-company comparisons challenging for stakeholders.

ii. ESG 2nd Pillars: Social (S) Disclosure

Social disclosure, according to Dicuonzo et al. (2022), reflects corporate commitment to ethical values, human rights, and community engagement, creating a socially responsible culture. This transparency builds trust with stakeholders, with corporate social responsibility (CSR) disclosures playing a proactive role in strengthening resilience (Khanchel & Lassoued, 2022). Wang et al. (2022) argued for embedding ESG principles in organisational strategy, highlighting social disclosure's relevance in risk mitigation.

iii. ESG 3rd Pillars: Governance (G) Disclosure

Governance disclosure addresses corporate governance structures shaped by legal, cultural, and institutional factors. The inclusion of independent directors, noted by Albitar, Abdoush, and Hussainey (2022), enhances board efficiency, while robust internal controls fortify reporting credibility (Wahjono et al., 2023). Governance indices provide insight into internal mechanisms essential for maintaining effective governance, advancing procedural efficacy within companies (Khanchel & Lassoued, 2022).

Internal Audit Disclosure

Internal audit disclosure has garnered substantial attention in corporate governance. Scholars such as Anderson, Francis, and Stokes (1993) emphasised the role of audit mechanisms in stable companies, while Johl, Johl, Subramaniam, and Cooper (2013) highlighted regulatory backing for internal audit functions (IAF), which are vital for monitoring activities and uncovering issues like mismanagement. Abbott, Daugherty, Parker, and Peters (2016) advocated for improved internal audit quality to tackle growing business complexities. Endaya and Hanefah (2016) focused on enhancing Internal Audit Effectiveness (IAE), with Holt (2012) linking internal audits to reliable disclosures.

i. Internal Audit Independence Disclosure

Internal audit independence disclosure stresses the importance of audit function autonomy to ensure effective governance. Scholars such as Bermudez Cuevas, Mörtzsjö, and Nilane (2015) supported the idea of Chief Audit Executives having direct access to senior management and the board, reinforcing independence through dual-reporting structures. Onay (2021) underscored the role of independent internal audits in strengthening transparency and accountability.

ii. Incentives for Internal Auditors Disclosure

Incentives for internal auditors disclosure examines motivators influencing auditor performance. Badara (2012) pointed to continuous training as key to enhancing auditor capabilities for tackling emerging risks, while Handajani, Muhsyaf, and Sokarina (2023) highlighted whistleblower protection as critical to promoting ethical behaviour and risk management.

iii. Internal Audit Efficiency Disclosure

Internal audit efficiency disclosure focuses on the elements driving audit effectiveness. Tai, Lai, and Yang (2020) found audit committees crucial in overseeing

internal audits, thus strengthening accountability. Mihret and Grant (2017) stressed the need for internal auditors to engage early in risk assessments, especially for ESG risks, while adequate resources and alignment with universal standards remain essential for optimising performance.

Board of Directors Disclosure

Board of Directors Disclosure has been recognised for its critical role in ensuring the credibility of financial reporting (Johl et al., 2013). Scholars emphasised the interaction between internal governance structures and the effectiveness of internal audits (Johl et al., 2013). Investigations into board diversity underscored the significance of industry expertise and professional qualifications (Kang et al., 2007). The impact of gender diversity on financial performance and sustainability was also examined (Romano et al., 2020), noting that CEO duality could undermine the positive effects of female directors on ESG performance. Furthermore, board composition was found to prevent conflicts of interest and enhance oversight (Ghosh, 2006). Anderson, Mansi, and Reeb (2004) highlighted the crucial role of boards and audit committees in maintaining the credibility of financial reporting. Overall, Board of Directors Disclosure significantly influences corporate governance and reporting quality, with ongoing research aiming to understand its implications for organisational success.

i. Board Size Disclosure

In the exploration of Board Size Disclosure, scholars like Chebbi and Ammer (2022) underscored the pivotal role of board size in shaping a company's performance and functionality. Their findings highlighted how the number of directors influences decision-making processes and governance dynamics. Notably, past researchers such as Arouri et al. (2011) consistently emphasized the annual count of directors as a crucial factor in their investigations, ensuring comparability across studies. Additionally, Carpenter and Westphal (2001) highlighted the positive effects of diversity on boards, suggesting that a well-balanced membership enhances governance effectiveness.

ii. Board Independence Disclosure

In Board Independence Disclosure, Wong et al. (2022) observed a significant association between board independence—particularly the presence of independent and

female directors—and a firm's commitment to enhancing ESG scores. Previous research emphasised the protective role of independent directors in corporate governance, especially during critical events like mergers (Kelton and Yang, 2008). This underscored the importance of robust governance structures in enhancing ESG performance and protecting shareholders.

iii. Leadership Structure Disclosure

Regarding Leadership Structure Disclosure, scholars such as Romano et al. (2020) emphasized the separation of CEO and chairman roles to mitigate conflicts of interest, aligning with agency theory principles. Past studies, like those by Farrakhova (2022), explored the impact of CEO tenure on organisational adaptability and financial success, suggesting an adverse relationship with prolonged tenure. Furthermore, the dichotomy between dual and non-dual leadership structures, as explored by Peasnell et al. (2005), highlighted the influence of CEO control over board operations and the importance of objective indicators like gender and education in CEO evaluations.

Theoretical Framework

The study on "Internal Audit and Board of Director Dimension Towards Environmental, Social, and Governance (ESG) Disclosure Among Public Listed Companies in Malaysia" delved deeply into agency theory, which served as a foundational framework for analyzing the intricate relationships between shareholders, management, internal auditors, and the board of directors. Esteemed scholars such as Kinney (2000), Albitar, Abdoush, and Hussainey (2022), and Wang, Yu, and Li (2022) emphasized the pivotal role of agency theory in understanding conflicts of interest and ensuring transparency and accountability in ESG disclosure practices.

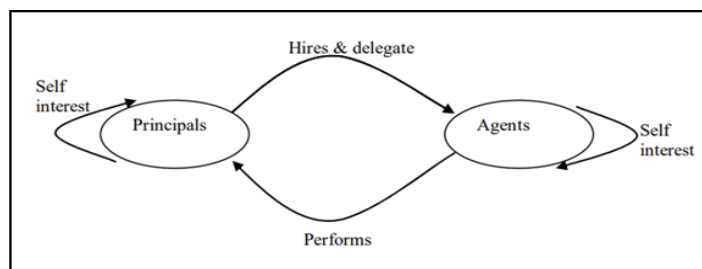


Figure 1: The Agency Model by Abdullah & Valentine (2009)

The research meticulously examined how the dimensions of internal audit and the board influenced ESG disclosure, paying particular attention to aligning shareholder interests with management decisions. Figure 1 highlighted the critical nature of internal assurance mechanisms and scrutinized factors such as board composition, independence, and leadership structure in mitigating agency problems and effectively representing shareholder interests. By leveraging agency theory, the study aimed to provide comprehensive insights into the internal mechanisms shaping ESG disclosure practices among public listed companies in Malaysia, taking into account the evolving landscape of ESG considerations in the country.

Conceptual Framework

ESG disclosure was disaggregated into environmental, social, and governance dimensions. Environmental disclosure assessed the extent to which companies reported on their environmental impact and sustainability initiatives. Social disclosure encompassed information on corporate social responsibility, employee relations, and community engagement. Governance disclosure focuses on the transparency and effectiveness of corporate governance structures.

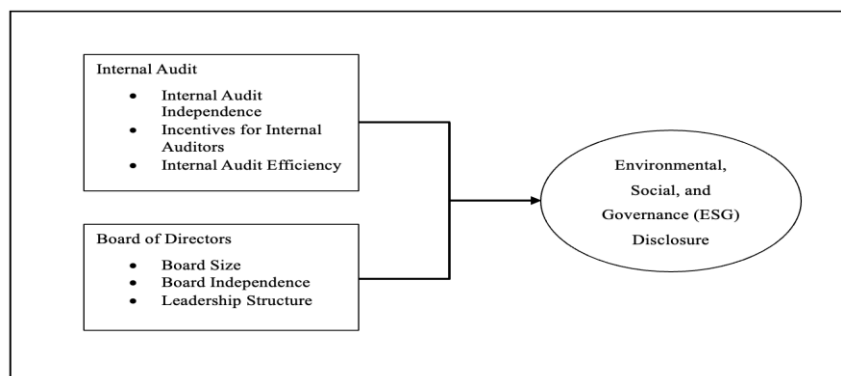


Figure 2: Conceptual Framework for Internal Audit, Board of Director Towards Environmental, Social, And Governance (ESG) Disclosure

The breakdown of ESG into environmental, social, and governance dimensions was informed by the works of Rahman and Post (2012); Albitar et al. (2022); Dicuonzo et al. (2022), Khanchel and Lassoued (2022); Wang et al. (2022); Hayes (2023); Wahjono et al. (2023); and Zhao et al. (2023). These scholars provided foundational

insights into the multifaceted nature of ESG disclosure, guiding the study's approach to dissecting and analysing the different components of corporate sustainability reporting.

In exploring internal audit variables, the study incorporated the perspectives of Sawyer (1988); Schneider and Wilner (1990); Kinney (2000); Abdelwahab (2002); Cohen et al. (2002); Klein (2002); Bebczuk (2005); Defond et al. (2005); Martinek (2005); Lin et al. (2011); Alshbiel and Al-Zeaud (2012); Baxter et al. (2012); Rahman and Post (2012); Kaur, Subramaniam, and Cooper (2013); Bermudez Cuevas, Mörtzjö, and Nilane (2015); Onay (2021); Zhang and Wei (2022); Handajani, Muhsyaf, and Sokarina (2023); Zhao et al. (2023).

The study also delved into the role of the Board of Directors as an influential determinant of ESG disclosure. The insights from Beasley (1996); Klein (2002); Mehran and Adams (2003); Kyereboah-Coleman and Biekpe (2006); Abdelsalam and Street (2007); Arouri et al. (2011); Garcia-Meca et al. (2015); Sanchez and Noguera-Gámez (2017); Arayssi et al (2019); Farrakhova (2022); and Kamaludin et al (2022), and influenced the conceptualization of Board of Directors variables.

Hypotheses Development

The development of hypotheses was essential in identifying factors influencing ESG disclosure practices. This section focused on governance mechanisms—particularly internal audit functions and board characteristics—and their impact on the quality and transparency of ESG reporting. The objective was to establish a clear framework for analysing these factors, addressing gaps in previous research, and contributing to corporate governance and sustainability discussions.

Hypothesis (H1): Internal Audit and ESG Disclosure

Hypothesis (H1) proposed that a strong internal audit function results in better ESG disclosure. Studies by Zhao et al. (2023) and Baxter et al. (2012) indicated that effective internal audits help companies manage risks and improve governance, leading to more transparent ESG reporting. Schneider and Wilner (1990) highlighted internal audits' roles in enhancing governance and financial transparency.

- H1a: There is a significant relationship between internal audit independence and ESG disclosure.

- H1b: There is a significant relationship between incentives for internal auditors and ESG disclosure.
- H1c: There is a significant relationship between internal audit efficiency and ESG disclosure.

Hypothesis (H2): Board of Directors and ESG Disclosure

Hypothesis (H2) posited a significant relationship between the Board of Directors and ESG disclosure, with board composition influencing a company's ESG practices. Anderson and Williams (2019) found that diverse boards prioritised sustainability, improving ESG reporting quality. Lee and Faff (2021) also stressed the board's role in aligning corporate strategies with ESG considerations.

- H2a: There is a significant relationship between board size and ESG disclosure.
- H2b: There is a significant relationship between board independence and ESG disclosure.
- H2c: There is a significant relationship between leadership structure and ESG disclosure.

Hypothesis (H3): Internal Audit, Board Characteristics, and ESG Disclosure

Hypothesis (H3) examined the combined impact of internal audit and board characteristics on ESG disclosure. It proposed that factors like audit independence, incentives, and efficiency and board attributes like size, independence, and leadership structure collectively influenced ESG reporting reliability. Kinney (2000) highlighted audit independence as crucial for accurate ESG reports, while Beasley (1996) noted that larger, diverse boards improved sustainability reporting. Together, these factors illustrated the relationship between internal governance and ESG disclosure, influencing credibility and transparency.

- H3: Internal audit (independence, auditor incentives, and efficiency) or board of directors (size, independence, and leadership structure) is the best determinant of ESG disclosure.

RESEARCH METHOD

Research Design

This quantitative, cross-sectional study explored the relationships between internal audit mechanisms, board characteristics, and ESG disclosure in Malaysian Public Listed Companies (PLCs). Aligned with Abdullah & Valentine (2009) and Ahmad et al. (2023), the unit of analysis was individual PLCs to ensure clarity. Table 1 highlights annual reports as the primary data source, providing key insights into financial performance, internal audit processes, and governance structures. These reports offered a comprehensive view of ESG practices within PLCs, helping to clarify the connections between audit practices, board characteristics, and ESG disclosure.

Table 1:
Unit of Analysis

Units	Organisations
Sources	Annual Report of Public Listed Companies (PLCs)
Time Frame	Three years, from 2020 to 2022
Level of Analysis	Organizational level
Scope	Environmental, Social, and Governance (ESG) disclosure practices
Specific Focus	Internal audit practices, board dimensions, and their impact on ESG disclosure within individual PLCs

Population, Sample size and Sampling Technique

This study refers to the Bursa Malaysia ESG Ratings assessed by FTSE Russell and reveals that, among 787 Public Listed Companies (PLCs) on the main market, only 241 comply with ESG reporting requirements. Based on the methodology outlined by Krejcie and Morgan (1970), the effective population (N) for this study is 241, and the calculated sample size (S) is 148, derived from the 241 compliant PLCs. Consequently, this study will analyse the annual reports of 444 companies over three years, focusing on the reports from the selected sample of 148 companies that meet the ESG reporting criteria. Table 2 illustrated the details;

Table 2:
Sample Size

Population	Public listed companies in Bursa Malaysia under the main market (As of January 2023: 787 companies)
Exclusion Criteria	Companies not listed on Bursa Malaysia, and not under the main market
ESG Companies that are practicing ESG Reporting	241 Public Listed Companies under the main market in Bursa Malaysia complying with ESG reporting requirements
Population (N)	241 companies complying with ESG reporting requirements
Sample Size (S)	148 companies
Total Number Annual Report Review	148 companies (S) x three years (2020 to 2022) = 444 Annual Report Reviews

Accordingly, this research focused on publicly listed companies on Bursa Malaysia that were active for three years, from 2020 to 2022. As of January 2023, there are approximately 787 Public Listed Companies within the Main Market, as reported on the Bursa Malaysia website. Based on the Bursa Malaysia ESG Ratings assessed by FTSE Russell, it was found that only 241 of these companies comply with ESG reporting requirements. This compliance was determined through a systematic review of the ESG ratings and disclosures available on the Bursa Malaysia website, as detailed in Table 3.

Table 3:
Sampling Frame

Process	Number of PLCs that comply with ESG reporting requirements listed in the Bursa Malaysia	Descriptions
One	787	Total number of companies that listed in the Bursa Malaysia on the year 2023.
Two	241	Number of PLCs that comply with ESG reporting requirements listed in the Bursa Malaysia in December 2022.

Measurement ESG, Internal Audit (IA) and Board of Directors (BOD)

The measurement of the dependent variable, environmental, social, and governance (ESG) disclosure, utilised a dichotomous method index, following Rahman and Post (2012) and Bebczuk (2005). This enabled the separate assessment of environmental (E), social (S), and governance (G) pillars, with factors like CO₂ emissions, human rights, and management systems highlighted by Khanchel and Lassoued (2022) and Dicuonzo et al. (2022). In this scoring system, each indicator

received a 1 for compliance and a 0 for non-compliance, with total pillar scores calculated as a percentage. Scores ranged from 0 to 100, with scores below 50 indicating poor performance and above 70 indicating commendable practices, as Hayes (2023) noted.

Table 4:
Dependent Variable Measurement for Environmental, Social, and Governance (ESG) Disclosure

Dependent Variable	Measurement
Environmental	(E): (1) The environmental element of a corporation is its capacity to utilise natural resources efficiently in its activities, decreasing environmental emissions; (2) Use the dichotomous method index; and (3) ESG scores range from 0 to 100, with scores below 50 considered poor and scores above 70 deemed good. (Dicuonzo et al., 2022; Rahman and Post, 2012; Bebczuk, 2005; Hayes, 2023).
Social	(S): (1) The social component assesses a company's ability to promote ethical ideals and instill trust in its employees while upholding human rights; (2) Use the dichotomous method index; and (3) ESG scores range from 0 to 100, with scores below 50 considered poor and scores above 70 deemed good. (Dicuonzo et al., 2022; Rahman and Post, 2012; Bebczuk, 2005; Hayes, 2023).
Governance	(G): The governance dimension refers to a company's ability to act in the best interests of its shareholders by implementing effective corporate management systems and processes; (2) Use the dichotomous method index; and (3) ESG scores range from 0 to 100, with scores below 50 considered poor and scores above 70 deemed good. (Dicuonzo et al., 2022; Rahman and Post, 2012; Bebczuk, 2005; Hayes, 2023).

The study assessed internal audit and board of directors as independent variables, focusing on internal audit independence (AUIND), incentives for internal auditors (INCAUD), and internal audit efficiency (AUDEF). Using a dichotomous method index, companies scored "1" if certain indicators were present and "0" if not. Internal audit independence was evaluated by examining audit committee members' independence, following Klein (2002) and Bermudez Cuevas et al. (2015). Similarly, incentives and efficiency were assessed using coding systems from Defond et al. (2005). These factors were drawn from annual reports and corporate governance disclosures, facilitating systematic comparison across companies. The methodology aligns with prior findings from Abdelwahab (2002), Alshbiel and Al-Zeaud (2012), on the importance of incentives, independence, and efficiency in internal audit, while

Zhang and Wei (2022) contributed insights into contextual influences. Table 5 provided detailed items.

Table 5:

Independent Variable Measurement for Internal Audit Disclosure

Independent Variable		Measurement
Internal Independence	Audit	(AUIND): In terms of auditor independence, authorities are increasingly concentrating on audit companies' cultures. Each company was assigned a code of "1" if specific indicators of internal audit efficiency were identified and a code of "0" if otherwise. (Zhang & Wei, 2022; Bermudez Cuevas, Mörtzjö, and Nilan, 2015; Defond et al., 2005).
Incentives Auditor	Internal	(INCAUD): The usefulness of incentives in a wide range of companies. Each company was assigned a code of "1" if specific indicators of internal audit efficiency were identified and a code of "0" if otherwise. (Abdelwahab, 2002; ALshbiel and AL-Zeaud, 2012; Defond et al., 2005).
Internal Efficiency	Audit	(AUDEF): Audit performance, interdependence, professional competency, job scope, and the administration of the internal audit department. Each company was assigned a code of "1" if specific indicators of internal audit efficiency were identified and a code of "0" if otherwise. (Defond et al., 2005).

In the exploration of corporate governance dynamics, scholars such as Arouri et al. (2011), have emphasized the significance of board size, elucidating its operational definition as the total count of directors comprising the board. Insights from Mehran and Adams (2003) have highlighted the potential advantages associated with larger board sizes, while discussions on board independence, influenced by agency theory and the works of Kyereboah-Coleman & Biekpe (2006), underscore the pivotal role of independent directors in enhancing oversight.

$$BO.IN = \frac{\text{total number of independent directors on the board}}{\text{total number of board members}}$$

Similarly, dichotomous categorizations between dual and non-dual leadership configurations, as observed in studies by Abdelsalam and Street (2007), and Peasnell et al. (2005), facilitate standardized representations, aiding comparative analyses. Moreover, the examination of CEO attributes, as acknowledged by Farrakhova (2022), underscores the importance of objective indicators for assessing their impact, thereby enhancing the reliability of findings. Table 6 explain the measurement.

Table 6:

Independent Variable Measurement for Board of Directors Disclosure

Independent Variable	Measurement
Board Size	(BOS): Total number of directors represented on the board for every accounting year. (Arouri et al., 2011).
Board Independence	(BIND): The proportion of independent directors on the board determines board independence. (Kyereboah-Coleman & Biekpe, 2006).
Leadership Structure	(Duality): Companies that use dual type are marked with 0, whereas firms that use non-dual type are labelled as 1. (Abdelsalam & Street, 2007).

Data Analysis

The study by Sekaran and Bougie (2014) aimed to achieve three key objectives in quantitative data analysis: understanding the data, assessing its quality, and evaluating hypotheses. Using SPSS version 28, various statistical techniques such as multiple regression, correlation, and descriptive analysis were applied. Descriptive analysis generated essential statistics, including variance, range, and mean, to categorise variables. Correlation analysis, based on Cohen's (1988) effect size classifications, assessed the strength of relationships between ESG Disclosure Credibility and independent variables like Internal Audit Independence and Board Size. Multiple regression analysis identified the most influential factors on ESG in Malaysian publicly traded companies. Table 7 summarised the applied analyses.

Table 7:

Summary of Data Analysis

Data Analysis	Research Objectives
Descriptive Statistics	To measure the level of environmental, social, and governance (ESG) disclosure made by Public Listed Companies (PLCs) for the year ended 2022.
Pearson Correlation Coefficient (r)	To determine whether a relationship exists between internal audit (internal audit independence, incentives for internal auditors, and internal audit efficiency), board of directors (board size, board independence, and leadership structure), and environmental, social, and governance (ESG) disclosure for Public Listed Companies (PLCs) for the year ended 2022.
Hierarchical Regression	To determine the most influential variables between internal audit (internal audit independence, incentives for internal auditors, and internal audit efficiency) and board of directors (board size, board independence, and leadership structure) towards environmental, social, and governance (ESG) disclosure for Public Listed Companies (PLCs) for the year ended 2022.

FINDINGS AND DISCUSSION

Measuring the Level of ESG Disclosure

Assessing the impact of companies goes beyond just financial metrics. Environmental, social, and governance (ESG) factors have become crucial considerations for investors, consumers, and stakeholders alike. To effectively evaluate these aspects, we need a standardised approach to measurement. This is where the concept of “level of measurement” comes in for each pillar of ESG: environmental (E), social (S), and governance (G). Level of measurement refers to the scale and complexity used to quantify a particular ESG factor. It tells us how precise and meaningful the data is and, ultimately, how this study can interpret and compare it across different companies and industries.

The level of environmental, social, and governance (ESG) disclosure by Public Listed Companies (PLCs) for the year 2022 is typically measured in terms of categories or numerical scores. These measurements help rank companies based on the extent and quality of their disclosure practices. The categories could be ordinal, like “poor,” “moderate,” or “good,” indicating relative levels of disclosure (Hayes, 2023). Table 8, the level of measurement for Environmental (E), Social (S), and Governance (G) was meticulously examined, providing a comprehensive understanding of the variables under scrutiny.

Table 8:

Level of Measurement for Environmental (E), Social (S), and Governance (G)

Disclosure Level	Environmental (E)		Social (S)		Governance (G)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
.00	1	0.2	1	0.2	1	0.2
30.00	1	0.2	0	0.0	0	0.0
50.00	1	0.2	0	0.0	0	0.0
60.00	5	1.1	0	0.0	0	0.0
70.00	7	1.6	0	0.0	2	0.5
80.00	26	5.9	3	0.7	125	28.2
90.00	86	19.4	129	29.1	0	0.0
100.00	317	71.4	311	70.0	316	71.2
Total	444	100.0	444	100.0	444	100.0

The study's first objective was to assess the level of environmental, social, and governance (ESG) disclosures made by Public Listed Companies (PLCs) for 2022. For the Environmental (E) pillar, all companies disclosed environmental data, with 71.4% providing comprehensive information (100% disclosure), indicating a strong commitment to sustainable practices, as noted by Khanchel and Lassoued (2022) and Wang, Yu, and Li (2022).

The Social (S) pillar also showed positive results, with 70.0% of companies achieving full social disclosure, while only 0.2% provided no social data. This high level of transparency aligns with insights from Khanchel and Lassoued (2022), although scholars like Chebbi and Ammer (2022) suggest further examination of specific social disclosures.

For the Governance (G) pillar, every company disclosed governance practices at the highest level, with 71.2% reaching the top disclosure category, demonstrating a commitment to transparent governance, as emphasised by Holtz and Sarlo Neto (2014). Scholars such as Wahjono, Iswanto, Kefi, and Subchan (2023) underscore the need for ongoing monitoring in this area.

The assessment applied a binary scoring system, rating companies "1" for relevant disclosures and "0" for absence, yielding a score as a percentage of the total possible. This scoring approach, informed by Rahman and Post (2012) and Bebczuk (2005), enabled a structured and comparable evaluation across ESG categories by focusing on indicators like emissions for environmental, labour rights for social, and board composition for governance disclosures.

Table 9:
Level of Measurement for Environmental, Social, And Governance (ESG)

Disclosure Level	Environmental, Social, And Governance (ESG)	
	Frequency	Percent
<70.00	1	0.2
73.33	2	0.5
76.67	4	0.9
80.00	8	1.8
83.33	23	5.2
86.67	84	18.9

90.00	10	2.3
93.33	2	0.5
96.67	5	1.1
100.00	305	68.7
Total	444	100.0

The analysis of companies' disclosure practices regarding ESG factors, as shown in Table 9, indicated a substantial majority (68.7%) demonstrating full transparency by disclosing ESG performance at the highest level (100%). This aligns with scholars' emphasis on comprehensive ESG disclosure, such as Khanchel and Lassoued (2022). However, challenges in the ESG realm, as highlighted by scholars like Zhao et al. (2023), underscore the need for consistent systems and standards for disclosing ESG information.

Measuring the relationship between internal audit (internal audit independence, incentives for internal auditors, and internal audit efficiency), the board of directors (board size, board independence, and leadership structure), and environmental, social, and governance (ESG) disclosure for Public Listed Companies (PLCs) for the year ended 2022

The hypotheses in the findings were derived from a correlation analysis using Pearson correlation coefficients (r) to investigate relationships among internal audit dimensions (audit independence, auditor incentives, and audit efficiency), board of directors' attributes (board size, board independence, and leadership structure), and environmental, social, and governance (ESG) disclosure in Malaysian Public Listed Companies (PLCs) for the year ended 2022. Each hypothesis was discussed in relation to the research objectives and testing methods. Table 10 presented the Pearson correlation coefficients (r) for internal audit factors, including internal audit independence, auditor incentives, and audit efficiency, in relation to ESG disclosure.

Table 10:

Results for Pearson Correlation Coefficients (r) for Internal Audit (Internal Audit Independence, Incentives for Internal Auditors, And Internal Audit Efficiency) Towards ESG Disclosure.

	Environmental, Social, and Governance (ESG)	Internal Audit Independence (AUIND)	Incentives Internal Auditor (INCAUD)	Internal Audit Efficiency (AUDEF)	Internal Audit (IA)
Environmental, Social, and Governance (ESG)	1				
Internal Audit Independence (AUIND)	.903** 444	1			
Incentives Internal Auditor (INCAUD)	.865** 444	.991** 444	1		
Internal Audit Efficiency (AUDEF)	.936** 444	.954** 444	.908** 444	1	
Internal Audit (IA)	.903** 444	1.000** 444	.992** 444	.953** 444	1

***. Correlation is significant at the 0.01 level (2-tailed).*

The study's first hypothesis (H1) posited a link between Internal Audit and ESG Disclosure, indicated by a strong correlation ($r = 0.903$, $n = 444$, $P < 0.01$), suggesting that companies with stronger ESG focus tend to have enhanced internal audit mechanisms. This aligns with findings by Zhao et al. (2023) and Baxter et al. (2012), who emphasised the significant role of internal audit in strengthening financial reporting quality, supporting H1.

Moving to the subsequent hypothesis, H1a, exploring the relationship between Internal Audit Independence and ESG Disclosure, produced a similar correlation ($r = 0.903$, $P < 0.01$). This finding echoed Bermudez Cuevas et al. (2015), who linked internal audit independence with improved financial reporting quality, reinforcing H1a.

Moreover, the third hypothesis, H1b, examining the effect of incentives on internal auditors' impact on ESG Disclosure, with a notable correlation ($r = 0.865$, $P < 0.01$). Supporting studies by Alshbiel and Al-Zeaud (2012) highlighted the influence of incentives on auditor performance, affirming H1b.

On top of that, H1c delved into the Relationship between Internal Audit Efficiency and ESG Disclosure, showing a strong correlation ($r = 0.936$, $P < 0.01$). This result aligned with research by Sawyer (1988), who underscored the role of efficient resource allocation in internal audit. Findings were further supported by Martinek (2005), who linked audit efficiency with enhanced transparency. Table 11 detailed Pearson Correlation Coefficients (r) for Board of Directors variables, including Board Size, Independence, and Leadership Structure, with ESG Disclosure.

Table 11:
Results for Pearson Correlation Coefficients (r) for Board of Directors (Board Size, Board Independence, And Leadership Structure) Towards ESG Disclosure.

	Environmental, Social, and Governance (ESG)	Board Size (BOS)	Board Independence (BIND)	Leadership Structure (Duality)	Board of Directors (BD)
Environmental, Social, and Governance (ESG)	1				
	444				
Board Size (BOS)	.552** <.001	1			
	444	444			
Board Independence (BIND)	.936** <.001	.617** <.001	1		
	444	444	444		
Leadership Structure (Duality)	.936** <.001	.564** <.001	.998** .000	1	
	444	444	444	444	
Board of Directors (BD)	.917** <.001	.743** <.001	.985** .000	.972** <.001	1
	444	444	444	444	444

** . Correlation is significant at the 0.01 level (2-tailed).

The fifth hypothesis (H2) proposed a link between the Board of Directors and ESG Disclosure, revealing a strong positive correlation ($r = 0.917$, $P < 0.01$). Scholars like Kamaludin et al. (2022) supported this, underscoring the board's role in enhancing ESG disclosure quality and corporate trust, affirming H2.

Moving forward, the sixth hypothesis, H2a, examined Board Size's effect on ESG Disclosure, showing a moderate positive correlation ($r = 0.552$) with significance. Supported by Arayssi et al. (2019), findings suggested that larger boards, despite

potential coordination challenges, bring diverse expertise that strengthens ESG practices.

Transitioning to the seventh hypothesis, denoted as H2b, explored Board Independence and ESG Disclosure, with a very strong correlation ($r = 0.936$, $P < 0.01$). Garcia-Meca et al. (2015) noted that independent directors often advocate for transparent ESG reporting, enhancing governance and ethical standards, which supports H2b.

Furthermore, the eighth hypothesis, H2c, examined the link between Leadership Structure and ESG Disclosure, revealing a robust positive correlation ($r = 0.936$, $P < 0.01$). Kamaludin et al. (2022) highlighted that strong leadership structures facilitate comprehensive ESG reporting, while Sanchez and Noguera-Gómez (2017) noted context-specific factors. Findings confirmed that dedicated leadership positively impacts ESG transparency.

Measuring the internal audit (internal audit independence, incentives for internal auditors, and internal audit efficiency), and the board of directors (board size, board independence, and leadership structure), most influential variable of environmental, social, and governance (ESG) disclosure for Public Listed Companies (PLCs) for the year ended 2022

The research objective was to identify the most influential variables between internal audit factors (audit independence, auditor incentives, and audit efficiency) and board of directors' attributes (board size, board independence, and leadership structure) regarding environmental, social, and governance (ESG) disclosure for Public Listed Companies (PLCs) for the year ending 2022. Hierarchical regression analysis provided valuable insights into the relationships between the independent and dependent variables, highlighting their relative importance. Findings from the hierarchical regression analysis were presented in Table 12, elucidating the complex dynamics within the data.

Table 12:
Results for Hierarchical Regression

Variables	Std Beta Model 1	Std Beta Model 2
Independent Variables		
Internal Audit Efficiency (AUDEF)	0.936***	0.861***
Leadership Structure (Duality)		0.487*
Internal Audit Independence (AUIND)		0.108*
Incentives Internal Auditor (INCAUD)		0.083**
Board Size (BOS)		-0.041
Board Independence (BIND)		0.000
Model Statistics		
R Square	0.877	0.878
Adjusted R Square	0.876	0.877
F Value	3142.991	1585.752
F Change	3142.991	4.392
Sig. F Change	<.001	0.037
Durbin-Watson		1.009

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

The third research objective aimed to identify the key variables within internal audit and board of directors that most influenced ESG disclosure for Public Listed Companies (PLCs) in 2022. Using hierarchical regression, this study analysed the impact of various independent variables on ESG disclosure, finding alignment with Agency Theory, which addresses conflicts between shareholders and management. Kinney (2000) stressed the importance of internal assurance processes to reduce information asymmetry, making ESG disclosures more transparent and reliable. Corporate governance factors, like audit efficiency and leadership structure, appear to mitigate agency issues.

Internal audit efficiency (AUDEF) showed a significant impact in Model 1 (0.936) and Model 2 (0.861), emphasising that a streamlined audit process strengthens ESG reporting accuracy. This aligns with Agency Theory by reducing information asymmetry and ensuring management acts in shareholders' best interests. Leadership structure, with a positive coefficient of 0.487, suggested that clear role separation for CEOs and Chairpersons enhances governance and sustainability focus. Daily et al. (2003) supported that role clarity reduces conflicts of interest, enhancing oversight in ESG disclosures.

Internal audit independence (AUIND) also showed a positive, significant relationship with ESG disclosure ($\beta = 0.108$), echoing Beasley's (1996) findings on board independence and its role in fostering objectivity and transparency in reporting. Albitar, Abdoush, and Hussainey (2022) reinforced that audit and board independence are essential for providing unbiased information to shareholders. An independent audit function protects against ESG data manipulation, thus safeguarding shareholder interests.

Conversely, incentives for auditors (INCAUD), board size (BOS), and board independence (BIND) were not statistically significant, consistent with literature from Beasley (1996), highlighting the complex relationships between board composition and ESG disclosures. Although not significant in this study, these factors may still help align management with shareholder expectations and merit further research.

In summary, internal audit efficiency, leadership structure, and audit independence were significant in influencing ESG disclosure, supporting Agency Theory's assertion that governance mechanisms can align management actions with shareholder interests. The results affirm that clear governance structures promote credible, transparent ESG disclosure, reducing agency conflicts and enhancing shareholder trust.

RECOMMENDATIONS

In light of the complex relationship between internal audit, board dimensions, and ESG disclosure among publicly listed companies in Malaysia, recommendations were made to enhance understanding and encourage positive advancements. Firstly, benchmarking and comparative analysis were suggested to identify disparities and opportunities for alignment with international best practices, providing valuable insights to regulatory bodies, corporate boards, and policymakers. For instance, comparing Malaysia's ESG reporting frameworks with those of leading ESG-conscious nations could reveal areas for improvement. Secondly, exploring additional moderating variables, such as cultural factors and industry regulations, was recommended to deepen the understanding of the relationships involved and develop tailored strategies for enhancing ESG practices in Malaysian public listed companies.

CONCLUSION

This study on Environmental, Social, and Governance (ESG) disclosure among Public Listed Companies (PLCs) for 2022 demonstrated a strong, industry-wide commitment to sustainable practices. Companies displayed a pronounced focus on environmental issues, with a direct link between disclosure levels and environmental performance, particularly in companies achieving a “good” rating. Social reporting was robust, with limited representation in the moderate category, showing a clear preference for comprehensive disclosure. Governance disclosures also reflected high transparency, reinforcing an industry-wide adherence to sustainable corporate governance, though some areas for improvement were noted.

The findings further highlighted significant relationships between internal audit and board variables with ESG disclosure, particularly among companies prioritising ESG principles. Variables such as internal audit independence, incentives, and efficiency, along with board size, independence, and leadership structure, positively influenced ESG reporting, aligning with existing literature. Hierarchical regression identified internal audit efficiency as the most influential factor for transparency in disclosures, followed by the importance of a strong leadership structure.

Policy implications include recommendations for the Securities Commission Malaysia (SC) to enhance ESG frameworks, specifically by enforcing independent internal audits to strengthen ESG credibility. Agency Theory’s relevance is evident in this context, addressing potential conflicts of interest between shareholders and management. A robust internal audit process helps reduce these conflicts, supporting transparent reporting. By examining governance through Agency Theory, this study provides valuable insights for Malaysian companies and policymakers to refine their sustainable governance practices.

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