

CHAPTER II

LITERATURE REVIEW

2.1 Literature Review

2.1.1 Stakeholder Theory

Stakeholder Theory was introduced by Freeman (1984), who argued that “the stakeholder concept provides a new way of thinking about strategic management—that is, how a corporation can and should set and implement set direction.” In this theory, a stakeholder is defined as “any group or individual who can affect or is affected by the achievement of the firm's objectives” (Freeman, 1984). Furthermore, “stakeholders include employees, customers, suppliers, stockholders, banks, environmentalists, government and other groups who can help or hurt the corporation” (Freeman, 1984). Similarly, Freeman et al. (2010) explain that “there are groups and individuals who have a stake in the success or failure of a business”

Freeman et al. (2010) state that “stakeholder theory has been developed over the last thirty years to counter this dominant mindset.” Accordingly, “the stakeholder theory literature seems to represent an abrupt departure from the usual understanding of business as a vehicle to maximize returns to the owners of capital.” Instead, “stakeholder theory suggests that if we adopt as a unit of analysis the relationship between a business and the groups and individuals who can affect or are affected by it, then we have a better chance to deal with these three problems.” As a result, Freeman et al. (2010) argue that “the stakeholder view is a more useful way of understanding modern capitalism.”

According to Khornida et al. (2025), “stakeholder theory posits that companies are obligated to be responsible and beneficial to their stakeholders because their existence is highly dependent on the support of stakeholders to maintain the company's sustainability. The growing issue of sustainability has led stakeholders to shift their views that a company's performance is not only measured by financial performance but also by non-financial performance, such as environmental, social, and governance factors. Through ESG disclosure, the information in the report shows that the company

has fulfilled the stakeholders' rights regarding sustainability aspects in the company's operations.” Similarly, Arhinful et al. (2024) state that “ESG indicators, akin to financial metrics for shareholders, are increasingly used by organizations to assess and quantify corporate performance across a larger group of stakeholders. These indicators play a crucial role in promoting stakeholder engagement, as a successful ESG approach necessitates adopting risk management methods that enhance performance and involve stakeholders.”

In relation to board size, Treepongkaruna et al. (2024) explain that Stakeholder Theory “posits that larger boards foster stakeholder participation in businesses' decision-making processes, incentivizing businesses to promote sustainability and avoid controversial activities (Hillman et al., 2001; Zubeltzu-Jaka et al., 2019; de Villiers et al., 2011).” Furthermore, “according to the stakeholder theory, a larger and more diverse board of directors creates more opportunities for developing connections with other stakeholders by incorporating social welfare objectives, environmental issues and commitments, moral standards, and ethical approaches in addition to purely financial objectives” (Hillman et al., 2001; Zubeltzu-Jaka et al., 2019, as cited in Treepongkaruna et al., 2024). Likewise, Pane and Nainggolan (2024) state that “the stakeholder theory highlights the importance of boards that represent a wide range of stakeholder interests in order to enhance environmental, social, and governance (ESG) performance by addressing the larger requirements of society.”

In relation to board independence, Arhinful et al. (2024) argue that “according to stakeholder theory, an independent board helps mitigate conflicts among stakeholders, fostering management activities aimed at long-term value optimization and increased transparency.” Furthermore, “higher board independence, as suggested by stakeholder theory, leads to fewer conflicts over benefits distribution, encouraging management to prioritize long-term goals and enhancing transparency and overall performance” (Shahzad et al., 2016, as cited in Arhinful et al., 2024). In addition, Andani & Setyawan (2025) states “independent commissioners who are not affiliated with or influenced by any party can encourage companies to disclose more information to stakeholders, including sustainability reports, this is based on stakeholder theory.”

In relation to board overseas educational background, EmadEldeen et al. (2025) state that “the nature of such education on a board may raise the impact of ESG investment in sensitive industry companies that align with the Stakeholder Theory in satisfying stakeholder expectations and, hence, having a financial upturn.” Similarly, “this theory expects that varied boards are essential for enhancing information disclosure to a variety of stakeholders” (EmadEldeen et al., 2025).

Regarding board age diversity, EmadEldeen et al. (2025) explain that “from a stakeholder theory perspective, corporate sustainability has been related to age diversity,” because “directors change their behavior with age, as they will be more sensitive to societal welfare and more willing to contribute to it.” Furthermore, “according to stakeholder theory, diverse boards play an essential role in exhibiting environmentally responsible behavior by improving the disclosure of value-relevant information to a wide range of stakeholders. Furthermore, having a diverse board increases the board’s resources, strengthens its capacity to identify strategic opportunities, develops successful plans, and improves overall firm performance” (EmadEldeen et al., 2025). Additionally, “stakeholder theory states that age diversity in board membership enables companies to respond to diverse stakeholder interests more effectively due to the combination of experience-based insights and innovative ideas” (Rahayu & Diah, 2022, as cited in Arifiona & Wahyundaru, 2026).

In relation to firm value, Chams et al. (2021) note that “Edward Freeman (1984) claims a synergetic relationship between environmental performances, social engagement, and financial achievements. The rationale behind this positive association is due to improved market competitiveness, decreased transaction costs, and cohesive interaction among the stakeholders’ network, entailing a higher overall firm performance.” Likewise, Meilantika et al. (2026) state that “the results of this study support stakeholder theory, which states that companies have a responsibility to meet the interests of stakeholders through information transparency and accountability.” Furthermore, “the influence of firm value on ESG disclosure indicates that market pressure and corporate reputation are driving factors in increasing sustainability transparency” (Meilantika et al., 2026).

2.1.2 Signaling Theory

The origins of Signaling Theory can be traced to the work of Spence (1973). As explained by Bird & Smith (2005), “Schelling (1960) provided insights about signals of commitment, Spence (1973) developed a model of job-market signaling, Frank (1988) applied the same logic to signals of moral commitment, and political scientists (e.g., Baumgartner and Leech 1998, Kollman 1998) have made similar arguments about the lobbying efforts of interest groups.” Since its introduction, signaling theory has been applied in various contexts. H. Yang et al. (2026) explain that “signaling theory was first proposed by Spence to explain information asymmetry in the labor market, and has since been widely applied in capital markets, product markets, and other fields.”

Chouaibi et al. (2022) state that “the emergence of signaling theory is the result of the information economy. Thus, in a context of informational asymmetry between stakeholders of the company, managers have an interest in making good decisions such as the disclosure of information to the financial market on the prospects for profitability of their company in order to report to obtain good financing conditions (Spence, 1976; Taj, 2016). Thus, signaling theory indicates that there is value for the information disclosed that can be a positive signal for investors and for economic decision-making (Spence, 2002; Connelly et al., 2011).” Similarly, Ghardallou (2022) explains that “the signaling theory’s central premise is the creation of an ‘information bridge’ between stakeholders. The theory contributes to a better understanding of the evolution of nonfinancial reporting as a means of assuaging worries about managers misusing their information advantage. Managerial ‘information signals’ should be beneficial to all participants in the socially responsible firm model.”

In relation to ESG performance, Li et al. (2024) state that “signaling theory explains how firms communicate information through their behaviors and policies to reduce information asymmetry and shape their corporate image.” Furthermore, H. Yang et al. (2026) explain that “the theory holds that, in markets with severe information asymmetry, an information gap exists between informed parties (signal senders) and uninformed parties (signal receivers). Signal senders can transmit

credible information about their quality by adopting costly and hard-to-imitate signaling behaviors, thereby reducing information asymmetry and influencing the decisions of signal receivers.” In the corporate context, “firms act as signal senders, while external stakeholders such as shareholders and creditors are signal receivers.” Accordingly, “ESG performance can effectively alleviate this problem. For firms, as a comprehensive signal reflecting long-term development potential, ESG performance can gain recognition from external stakeholders through effective disclosure and continuous improvement, thereby helping firms access scarce resources such as capital and talent to support the development of core competencies” (H. Yang et al., 2026).

2.1.3 Sustainability

“The landmark Brundtland Report of 1987 provided a pivotal framework, defining sustainability as ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’” (Hasan, 2025). More broadly, Laine et al. (2022) define “sustainability simply means to maintain, to endure into the long term. It is also understood as a state where things can keep going, can sustain themselves.” They further explain “sustainability is about living within the limits of the Earth. It is considered to be a desired state which we not only wish to achieve but must achieve if the life that the Earth currently supports is to continue into the future.” Noeth (2024) defines sustainability from a stakeholder perspective, stating “sustainability is fundamentally about balancing short-term needs with long-term impacts for all stakeholders.”

Laine et al. (2022) explain “while the SDGs represent sustainable development via 17 goals, previously, sustainability and sustainable development were generally and commonly understood to consist of three dimensions—ecological, social and economic. These three dimensions are sometimes referred to as the triple bottom line (TBL), a term coined by John Elkington.” Similarly, Hasan (2025) states that “sustainability can be examined through three primary lenses: ecology, society and economy.”

Starting with the first dimension, he explains that “the ecological dimension of sustainability encompasses the environmental impacts of human activities,” noting

that “corporate pursuits of economic growth have often prioritised short-term gains over long-term environmental sustainability, leading to deforestation, habitat loss, species extinction and escalating carbon emissions. These environmental pressures degrade ecosystems and diminish the quality of life for present and future generations.” Next, he explains “sustainability also encompasses social dimensions, recognising the diverse needs and aspirations of human societies,” where “achieving sustainability requires addressing issues such as health, equity and cultural preservation,” and where “a fundamental principle of sustainability is ensuring equitable access to resources and opportunities for all.” Finally, he explains “the concept of economic sustainability gives rise to the Triple Bottom Line (TBL) framework. This accounting framework extends beyond traditional financial measures to incorporate environmental and social considerations. Often referred to as the “3Ps”, these dimensions encompass people, planet and profit” (Laine et al., 2022).

2.1.4 Environmental, Social, Governance (ESG) Performance

According to Laine et al. (2022), “the complexity inherent in the assessment and evaluation of sustainability factors has paved the way for the emergence of different types of aggregated metrics and rating schemes,” which “aim to help those interested in taking sustainability into account in their decision-making in the financial markets,” with this development the ESG performance measurement was developed. Bin-Feng et al. (2024) explain, “Environmental, Social, and Governance (ESG) performance is a measure of how well a company manages its impacts and responsibilities on the environment, society, and its stakeholders.” Similarly, Yang et al. (2024) explain that “ESG performance, which comprehensively considers the three dimensions of environmental (E), social (S) and governance (G) performance to evaluate corporate sustainable development, has become an important investment concept and corporate action guide around the world.” As a framework, “ESG primarily focuses on measuring a company’s performance in relation to specific environmental, social, and governance factors. It provides a framework for evaluating corporate practices, risks, and opportunities” (Noeth, 2024). She further emphasizes “along with financial performance and operational performance, ESG performance relates to how a company is measured, evaluated, and valued.”

Noeth (2024) explained “ESG has emerged as a requisite for contemporary business strategy. Environmental, social, and governance considerations are not just the ethical or moral aspects of business anymore; they have substantial implications for a company’s financial performance, risk management, and brand reputation.” Furthermore, “the value of ESG is multidimensional and extends beyond mere financial returns. ESG metrics have multifaceted applications for risk management and for the investment community. Companies with strong ESG performance are often better at mitigating risk, which can, in turn, lead to more stable returns.” ESG benefits investors as well, “ESG criteria can also help investors identify potential investment opportunities. Companies that lead in ESG performance may be better positioned for future challenges and could represent attractive investment opportunities.” Beyond investment considerations, Noeth (2024) explained “a company’s ESG performance is not just a reflection of its corporate responsibility—it can also impact its bottom line. Studies have suggested that companies with strong ESG practices tend to have 'a lower cost of capital, lower volatility, and fewer instances of bribery, corruption and fraud.' They also tend to be more efficiently operated and more resilient during market downturns.” As a result, “integrating ESG and sustainability practices can yield numerous benefits in terms of reputation, brand recognition, customer loyalty, talent recruitment and retention, and long-term value. Both ESG and sustainability mitigate risk and encourage responsible business practices.” Consequently, “ESG has become the new norm for businesses committed to sustainable and responsible practices.”

Understanding how ESG performance is evaluated requires a comprehension of its three ESG pillars. According to Muniz et al. (2023), “the environmental dimension relates to the health and resilience of ecosystems and the natural environment. It involves maintaining biodiversity, conserving resources, reducing pollution, addressing climate change, and promoting sustainable land use and resource management. A sustainable approach considers the Earth’s finite resources and aims to minimize negative impacts on the environment.” Within ESG, “environmental issues represent some of the most pressing and comprehensive in the ESG framework. The environmental pillar is composed of topics such as climate change, resource depletion, pollution, and conservation. The environmental pillar factors have a direct

impact on the planet's health and well-being, as well as the long-term viability of businesses. Those individual factors represent how a business interacts with and impacts the environment" (Noeth, 2024). Noeth (2024) explained that "by addressing environmental issues, businesses can reduce their carbon footprint, adopt sustainable practices, promote energy efficiency, and preserve natural resources. Environmental reporting is rooted in satisfying environmental regulatory requirements. In focusing on developing a strong environmental track record, companies can comply with those regulatory requirements, mitigate risk, enhance corporate reputation, and foster innovation."

According to Muniz et al. (2023), "the social dimension focuses on the well-being and quality of life of people. It includes aspects such as social equity, justice, human rights, health, education, cultural preservation, and community engagement. In a sustainable society, social systems should ensure that all individuals have access to basic needs, opportunities, and a high quality of life without compromising the needs of future generations." Noeth (2024) explained that within the ESG framework, "the social pillar encompasses a wide range of concerns, such as fair practices; diversity, equity, and inclusion; human rights; community relations; and social responsibility. A shorthand for the social pillar is it involves business activities that impact people including employees, customers, community stakeholders, and members of the larger society." She further emphasized "social issues are important as they directly impact a company's reputation, brand value, and long-term sustainability. By addressing social concerns, companies can build trust, enhance stakeholder relationships, attract top talent, mitigate risks, and drive innovation. Furthermore, ESG-oriented investors increasingly prioritize companies that demonstrate a commitment to being socially responsible, making social issues a key factor in attracting capital and securing financial success."

According to Hasan (2025), "the governance pillar captures the organisational structure and decision-making policies." Within the ESG framework, "the governance pillar incorporates topics such as board composition, executive compensation, transparency, ethics, and risk management. It is generally regarded as a reflection of

how a company is managed” (Noeth, 2024). Furthermore, Noeth (2024) explained “effective governance practices help establish a strong corporate culture, foster trust among stakeholders, mitigate risk, and inform decision-making. The “G” pillar reflects the internal management and corporate governance practices of a company. The “G” factors are the primary foundations for good corporate governance, and performance on those factors reflects how well a company is operated and managed.”

Laine et al. (2022) explained, “sustainability information seldom comes in a form which can be readily inserted into existing and well-established financial models. Instead, after identifying the material questions and topics, the investor needs to assess the value of different types of qualitative and quantitative ESG information and then integrate this evaluation into the financial decision-making process.” As a result, “the power of the various ESG rankings and sustainability rating schemes is substantial as investors seek to find some tangible, and apparently objective, basis for their estimations.” These rating schemes exist in various forms, “at the simplest, this could entail for instance an NGO including a company on a list of signatories committed to protecting some type of wildlife in its investments,” “other powerful examples would be stock market indexes annually updated list of companies which have been selected on the basis of varying sustainability criteria,” while “on a more advanced level, there are various ranking lists which are based on more complicated scoring systems of organisational activities.” Furthermore, Clément et al. (2022) explained “different agencies produce ESG scores under different methodologies. The most popular ESG scores came from prominent financial analysts, who also produce well-known stock indexes in the financial world.” According to Laine et al. (2022), “some of the rating schemes companies are given exact scores, while in other cases rankings are handed out in tiers.”

“Scores and ratings are available via prominent financial media companies, such as Thomson Reuters and Bloomberg, major finance companies, such as MSCI, as well as specialised companies, such as Sustainalytics” (Laine et al., 2022). Furthermore, an example of a local stock market index is the IDX ESG Leaders Index (IDXESGL) which has adopted the ESG Risk Ratings developed by Sustainalytics.

Although these ratings all evaluate ESG performance, each provider utilizes different methodologies in measurement.

The first ESG scoring methodology discussed is the ESG Scores from Thomas Reuters. In 2021, Thomson Reuters “announced that it and private equity funds affiliated with Blackstone have closed the sale of Refinitiv to London Stock Exchange Group plc (LSEG) in an all-share transaction.” The LSEG ESG Scores (formerly known as Refinitiv), “assess the policies, systems and processes by which a company manages material ESG risks within its operations and its supply chain. The focus of the Scores is to provide an absolute assessment of how corporates approach operational risk management, aligned with key global disclosure frameworks and regulations, with clear cross-sections as to where relevant comparisons can be made” (LSEG, 2026).

LSEG (2026) explains in their methodology “there are four high-level steps for ESG scoring, starting from Theme scoring, assessing materiality levels, aggregating into Pillar scores and then finally into the ESG scores.” The first stage, Theme Scoring, “is divided into five phases: Assess Disclosure, Assess Performance, Indicator Count, Threshold Comparison, and Add Scoring Caps.” In the next stage, “a materiality matrix determines the relative weight of Themes for a company. There are 12 categories called ‘Materiality Groups’ which are formed of TRBC5 Industry Groups with similar operational footprints.” In the pillar scoring stage, “Pillar Scores are calculated as a weighted sum of constituent Theme Scores, multiplied by Theme Weights,” where “a 5.0 demonstrates best practice in managing all material themes within the ESG Pillar” and “a 0.0 suggests all material ESG themes within the pillar lack core components of management.” Finally, “the Overall ESG Score is calculated as a weighted sum of Pillar Scores. It is a 0 to 5 absolute score.”

Table 2.1 LSEG ESG Scoring Scale

ESG Score	Category
0	Not Engaging
1	Limited
2	Developing
3	Established
4	Advanced
5	Leading

Source: (LSEG, 2026)

Another widely recognized ESG score provider is Bloomberg. “Bloomberg’s Scores measure a company’s exposure to and management of financially material industry-specific Environmental & Social (ES) risks and opportunities, as well as Governance (G) policies and practices with adjustments for country-specific rules and regulations” (Bloomberg, 2025). Bloomberg (2025) explains “financial materiality is defined as issues that can have a negative or positive impact on a company’s financial performance, such as revenue streams, operating costs, cost of capital, asset value and liabilities.” “The Scores consider both current exposure and management performance. Each Issue and Sub-Issue can be composed of metrics reflecting the performance, commitments and targets as well as policies that reflect the company’s management approach towards ESG risks and opportunities.”

In their methodology, Bloomberg (2025) explains their “approach to scoring ESG performance is characterized by a bottom-up, model-driven method driven primarily by self-reported, publicly available information that results in a transparent, parametric and rules-based scoring framework.” Furthermore, “Bloomberg’s Scores draw on major sustainability reporting frameworks used by public companies around the world to highlight the most material sustainability issues,” and “by embracing materiality as the central concept, Bloomberg’s approach focuses on the drivers of operating and financial performance.” In calculating the score, “Bloomberg Scores aggregate information across multiple levels of granularity.” Specifically, “Field Scores score input data fields and are aggregated into a Sub-Issue score,” while “Sub-Issue Scores are aggregated from Field Scores.” Subsequently, “Issue Scores are a

function of the weighted generalized mean of the Sub-Issue,” after which “Pillar Scores are aggregated from Issue Scores.” Finally, “Overall Scores are based on an aggregation of E, S and G Pillar Scores,” the “overall ESG Scores range from 0 to 10, where 10 is best.”

In addition to the ESG scores provided by LSEG and Bloomberg, MSCI is another prominent provider of ESG rating. “MSCI Sustainability & Climate (MSCI S&C) produces MSCI ESG Ratings, which provide an opinion of companies’ management of financially relevant ESG risks and opportunities. Each rating takes into consideration the company’s exposure to relevant ESG risks, the quality of management systems and governance structures to mitigate potential ESG risks, and where applicable, positioning to meet market demand for the provision of products and services that have a positive environmental or social contribution” (MSCI, 2026). In their methodology, MSCI (2026) explains “MSCI ESG Ratings are industry-relative measures and are determined at the company level,” with “ratings on a global seven-band scale from AAA (the highest ESG Rating) to CCC (the lowest ESG Rating).” Accordingly, “the top-level assessment is the overall Company ESG Rating, an industry-relative seven-point letter rating scale from AAA to CCC. These assessments are not absolute but are explicitly intended to be interpreted relative to a company’s industry peers.”

Explaining its ESG scoring methodology, MSCI (2026) states “the research process begins with an in-depth assessment of the ESG risks and opportunities that are relevant to each industry.” Subsequently, “MSCI S&C’s assessment of risk exposure may comprise three different areas of analysis, depending on the Key Issue: Business Risk Exposure—analyzes the breakdown of a company’s business in terms of revenue, assets or operations, Geographic Risk Exposure—analyzes the breakdown of a company’s geographic segments in terms of revenue, assets or operations, and Company-Level Risk Exposure factors—such as number of employees, size, environmental risk intensity of loan portfolio or sales reliant on raw materials of concern.” In addition, “MSCI S&C’s assessment of a company’s ability to manage its risk exposure on a Key Issue typically falls into two broad components: Practices and

Performance.” For the last step, “to arrive at a final ESG Rating from the selected Key Issue and Pillar scores, several steps are undertaken.” First, “The Weighted Average Key Issue Score is calculated as the weighted average of the Governance Pillar Score and the individual Environmental and Social Key Issue scores.” Next, “The Weighted Average Key Issue Score is then normalized relative to ESG Rating Industry peers.” Afterwards, “to enhance the stability of ESG Ratings and reduce volatility arising from small score movements near rating band thresholds, MSCI S&C applies rating band buffers when mapping Industry-Adjusted Scores (IAS) to a letter rating.” Finally, “each company’s final Industry-Adjusted Score corresponds to a rating between the highest ESG Rating (AAA) and the lowest ESG Rating (CCC).”

Table 2.2 MSCI ESG Rating Categories

Letter Rating	Category	Description
AAA	Leader	“A company leading its industry in managing the most significant sustainability risks and opportunities”
AA	Leader	
A	Average	“A company with a mixed or an unexceptional record of managing the most significant sustainability risks and opportunities”
BBB	Average	
BB	Average	
B	Laggard	“A company lagging its industry based on its high exposure and failure to manage significant sustainability risks”
CCC	Laggard	

Source: www.msci.com (2026)

The last renowned ESG rating discussed, is the ESG Risk Ratings provided by Morningstar Sustainalytics. In their methodology, Sustainalytics (2024a) explains “the ESG Risk Ratings measure the degree to which a company’s economic value is at risk driven by ESG factors or, more technically speaking, the magnitude of a company’s unmanaged ESG risks.” Expanding on this, they state “For each company, Unmanaged Risk is measured by evaluating a set of material ESG issues based on both the company’s exposure to and management of those issues. The resulting unmanaged risk scores for each issue are then summed to provide one score that represents the company’s overall ESG risk.”

“The ESG Risk Ratings are composed by the following three building blocks that contribute to a company’s overall rating score: 1) Material ESG Issues, 2) the baseline issues: Corporate Governance & Stakeholder Governance, and 3) Systemic ESG Issues & Idiosyncratic Issues.” Furthermore, “the core building block of the ESG Risk Ratings are the Material ESG Issues (MEIs). MEIs are focused on a topic, or set of related topics, that require a common set of management initiatives or a similar type of oversight.” “The Material ESG Issues building block of the ESG Risk Ratings forms the essential core of our methodology. It assumes that ESG issues can influence the economic value of a company in a given subindustry in a fairly predictable manner. Our rating is forward looking in the sense that it identifies these issues based on the typical business model and business environment a company is operating in.” There are “22 material ESG Issues used for new company assessments across all subindustries” (Sustainalytics, 2024a).



Picture 2.1 Sustainalytics Material ESG Issues (MEIs)

Source: (Sustainalytics, 2024a)

The Material ESG Issues (MEIs) presented in Picture 2.1 can be broadly grouped according to their primary sustainability focus. Beginning with environmental-related MEIs, Sustainalytics (2024b) explains that “Emissions Effluents and Waste encompasses a company's practices to minimize non-greenhouse gas emissions, waste and wastewater discharges across its operations, as well as its preparedness and response measures for potential pollution emergencies.” Furthermore, “Carbon — Own Operations encompasses the management of risks linked to a company's energy use and greenhouse gas (GHG) emissions within its operational control,” while “Carbon — Products and Services encompasses a company's management of energy efficiency and greenhouse gas (GHG) emissions of its products and services during their use phase.” In addition, “Land Use and Biodiversity focuses on how a company manages land use in its own operations and how it minimizes potentially adverse impacts of that use on the functioning of ecosystems and biodiversity,” whereas “Land Use and Biodiversity — Supply Chain focuses on how a company handles relationships with its suppliers regarding their management of land use and the potentially adverse impacts of that use on the functioning of ecosystems and biodiversity.” Similarly, “Water Use — Own Operations focuses on how a company directly uses water in its production and operations, and how it manages contextual, localized water risks,” while “Water Use — Supply Chain focuses on how effectively a company incorporates and manages water-related risks within its supply chain.” Sustainalytics (2024b) further states that “Raw Materials Use encompasses a company's management of raw material inputs (excluding energy and petroleum-based products) in the production process,” and that “Environmental and Social (E&S) Impact of Products and Services captures how a company manages the environmental and social impacts stemming from its products and services, from design choices to disposal” (Sustainalytics, 2024b).

The next group of MEIs relates primarily to social issues and stakeholder well-being. Sustainalytics (2024b) explains that “Access to Basic Services refers to a company's ability to ensure access to health care products and services and manage risks related to cost effectiveness and price transparency.” Furthermore, “Community Relations focuses on how companies engage with local communities by assessing how

they involve local communities in business decisions, minimize adverse impacts on their wellbeing and foster sustainable community development over the long term.” In terms of human rights, “Human Rights encompasses a company's management of and respect for fundamental human rights within its own operations and includes proactive measures to prevent, mitigate and remediate adverse human rights impacts,” while “Human Rights — Supply Chain encompasses a company's management of fundamental human rights issues occurring within its supply chain and includes proactive measures to prevent, mitigate and remediate adverse human rights impacts.” In addition, “Human Capital encompasses a company's management of its human resources, from acquiring and retaining top talent, to providing advancement opportunities in a diverse and equal work environment, and adopting an inclusionary corporate culture.” Finally, “Occupational Health and Safety refers to a company’s ability to ensure its workforce is safe and healthy and to mitigate the risk of occupational hazards such as employee injuries or fatalities” (Sustainalytics, 2024b).

The remaining MEIs primarily relate to governance, oversight, and organizational resilience. Sustainalytics (2024b) explains that “Corporate Governance encompasses the mechanisms, processes and policies by which a company is managed and overseen to ensure its ability to mitigate risks, increase long-term value creation and safeguard its reputation.” Furthermore, “Stakeholder Governance encompasses the mechanisms, processes and policies used by a company to manage its extra-financial risks and broader stakeholder relationships beyond focusing solely on shareholders.” In addition, “Business Ethics encompasses business practices, that may be legal or illegal, and result in a financial benefit to an individual specifically or a company while having a negative impact on society or other company stakeholders.” Sustainalytics (2024b) further notes that “Data Privacy and Cybersecurity covers a company's data governance practices, including the collection, use, management and protection of data, to ensure compliance with regulations, safeguard against breaches and address ethical concerns on data use.” Moreover, “Product Governance encompasses a company's management of the entire lifecycle of its products and services to prevent and mitigate risks and consequences for its customers and end-users.” The framework also includes “Resilience,” which “focuses on the ability of

financial institutions to withstand negative shocks arising from changes in economic conditions.” Finally, “ESG Integration — Financials covers the integration of environmental, social and governance criteria into financial and real estate decision-making as investors aim to lower their risk, maximize returns, and find profitable investment opportunities” (Sustainalytics, 2024b).

“The second Building Block of our ESG Risk Ratings are the baseline Material ESG Issues Corporate Governance and Stakeholder Governance.” They explain “Corporate Governance is a system of rules and practices that help to ensure the interests of owners and managers are aligned and promote transparency and accountability amongst management and shareholders,” while “Stakeholder Governance considers perspectives and interests of various stakeholders to identify and mitigate potential reputational and financial risks.” “Both baseline issues are considered material, reflecting our conviction that poor governance poses material risks for companies” (Sustainalytics, 2024a).

The last Building Block of the Sustainalytics ESG Risk Ratings is Systemic ESG Issues & Idiosyncratic Issues. They explain “a Systemic ESG Issue captures the material risk of sea change events, unpredictable in nature, and affecting a large set of companies across a multitude of ESG issues. Systemic events are assessed through the Systemic Event Indicator (SEI). This type of issue is not caused by any company action and their management is (almost) completely out of a company’s control.” Whereas “Idiosyncratic Issues are triggered by company-specific events which are atypical for its business model, and therefore not part of its material ESG issues” (Sustainalytics, 2024a).

“The ESG Risk Ratings’ approach to materiality is assessed through two dimensions: Exposure and Management. The first dimension: Exposure reflects the extent to which a company is exposed to material ESG risks at the overall and the individual MEI level.” To measure exposure, “material ESG issues and their exposure scores are assessed at the subindustry level and then refined at the company level through Beta Indicators.” Specifically, “subindustry Exposure Score assessment begins with identifying the most relevant risk drivers based on an MEI’s content,” after

which “individual risk driver assessments are combined to produce a MEI-level quantitative materiality assessment.” The results are subsequently reviewed by sector experts, and “the final subindustry exposure score ranges from 2 (low exposure) to 10 (high exposure), with scores below 2 deemed immaterial” (Sustainalytics, 2024a).

At the company level, Sustainalytics applies beta indicators, which “reflect the degree to which a company’s exposure to a material ESG issue deviates from the average exposure to that issue within its subindustry.” Accordingly, “to arrive at a company’s exposure score for a particular ESG issue, the subindustry exposure score is multiplied by the company’s Issue Beta.” Sustainalytics explains that beta indicators are assessed across “five distinct thematic areas: Product & Production, Financials, Events, Geographic, and Governance,” and may be supplemented by analyst judgment through a qualitative overlay. Furthermore, “for some material ESG issues, the risk cannot be fully managed.” Therefore, “the share of risk that is manageable versus the share of risk that is unmanageable is predefined at the subindustry level by an Issue Manageable Risk Factor (MRF).” These MRFs “range from 30% to 100%” and are intended “to achieve more realistic rating outcomes and to ensure the comparability of ratings across companies and subindustries” (Sustainalytics, 2024a).

The second dimension of the ESG Risk Ratings is management, whereby “Management reflects how well a company is managing its exposure.” According to Sustainalytics, “the management score for a company is derived from a set of management indicators and outcome-focused indicators.” More specifically, “outcome-focused indicators measure management performance either directly in quantitative terms or via a company’s involvement in controversies.” Furthermore, “for each material ESG issue/subindustry combination, management- and event indicators are selected and weighted to explain and measure how well a company manages an issue.” These indicators are then incorporated into the overall ESG Risk Rating to determine the extent of unmanaged ESG risk faced by the company (Sustainalytics, 2024a).

“For some material ESG issues, the risk cannot be fully managed. The share of risk that is manageable versus the share of risk that is unmanageable is predefined at

the subindustry level by an Issue Manageable Risk Factor (MRF). MRFs range from 30% to 100% and represent the share of exposure to a material ESG issue that is deemed to be (at least theoretically) manageable by the company. MRFs are intended to achieve more realistic rating outcomes and to ensure the comparability of ratings across companies and subindustries.” (Sustainalytics, 2024a)

For the next dimension, “the management score for a company is derived from a set of management indicators and outcome-focused indicators. Outcome-focused indicators measure management performance either directly in quantitative terms or via a company’s involvement in controversies” Furthermore, “for each material ESG issue/subindustry combination, management- and event indicators are selected and weighted to explain and measure how well a company manages an issue. They may be applied to any issue where they are considered relevant and may therefore show up in the context of several material ESG issues” (Sustainalytics, 2024a).

“The final ESG Risk Ratings scores are a measure of unmanaged risk, which is defined as the portion of material ESG risk that is not (yet) managed by a company. The ESG Risk Ratings scoring system for a company is best thought of as a waterfall with four levels.” They explain “the starting point at the top is a company’s exposure to that issue, calculated as the product of the company’s subindustry exposure and its issue beta,” then “at the second level, Issue Manageable Risk (Manageable Risk) is separated from Issue Unmanageable Risk (Unmanageable Risk) with the help of the manageable risk factor,” “at the third level, the Issue Managed Risk (Managed Risk) is derived from the Issue Manageable Risk (Manageable Risk) by multiplying the latter with the Issue Management (Management Score)—interpreted as a percentage number—that is based on a set of management and event indicators outcomes.” Finally, “at the fourth level, Issue Unmanaged Risk (Unmanaged Risk) is calculated by either subtracting managed risk from exposure or by adding the management gap to the portion of risk that has been deemed unmanageable.” In the end, “the final ESG Risk Ratings score, the company’s full unmanaged risk, is calculated as the sum of the individual material ESG Issues’ unmanaged risk scores” (Sustainalytics, 2024a).

Table 2.3 Sustainalytics ESG Risk Categories

Category	Risk Score	Description
Negligible Risk	0–9.99	“ESG factors are considered to drive negligible risk to enterprise value. Visually represented by 5 globes.”
Low Risk	10–19.99	“ESG factors are considered to drive low risk to enterprise value. Visually represented by 4 globes.”
Medium Risk	20–29.99	“ESG factors are considered to drive medium risk to enterprise value. Visually represented by 3 globes.”
High Risk	30–39.99	“ESG factors are considered to drive high risk to enterprise value. Visually represented by 2 globes.”
Severe Risk	40–100	“ESG factors are considered to drive severe risk to enterprise value. Visually represented by 1 globe.”

Source: (Sustainalytics, 2024b)

Building on Sustainalytics’ ESG Risk Ratings framework, the IDX ESG Leaders Index (IDXESGL) is a prominent ESG stock market index in Indonesia that has incorporated Sustainalytics’ ESG Risk Ratings as a key component of their selection process. In their guidelines and methodology, IDX (2020) described the IDXESGL as “an index that measures the price performance of stocks with good Environmental, Social, and Governance (ESG) ratings, no significant controversies, and strong transaction liquidity and financial performance,” disclaiming the “ESG ratings and controversy analysis are conducted by Sustainalytics.” For their methodology, they state they use “Capped Free Float Adjusted Market Capitalization Weighted Average and ESG Tilt Factored,” while “during the evaluation, the weighting of each stock in the index is limited to a maximum of 15%.”

Explaining their general selection criteria, IDX (2020) stated “constituents of the IDX80 index and has an ESG risk rating from Sustainalytics” as their universe of eligible companies. For their selection criteria, they “exclude Listed Companies involved in Category 4 and 5 controversies, exclude Listed Companies with high and severe ESG risk scores, and from the remaining universe of stocks, listed companies are selected based on the lowest ESG risk score (with a minimum of 15 stocks and a maximum of 30 stocks)” (IDX, 2020).

In their maintenance of the index, IDX (2020) explains they have routine evaluations, both major and minor. Minor evaluations are done on “early June and December,” with its effective day on “the third Wednesday of June and December or next trading day if it is not a trading day.” While, they do the major evaluations on “March and September,” with its effective day on “the third Wednesday of March and September or next trading day if it is not a trading day,” to “select index constituents.” The routine evaluations are for “adjusting for changes in the number of listed shares, adjusting stock weights based on the free float ratio and the ESG tilt factor of the ESG risk score, and adjusting stock weights based on caps.” They state the announcement dates for the evaluations are “at latest, 5 trading days before the effective date.” “In addition to routine evaluations, non-routine evaluations may be conducted at any time on an incidental basis if there are significant changes in the number of shares, delistings, or other highly significant information regarding an index constituent, based on established processes” (IDX, 2020).

2.1.5 Board Characteristics

“Nestor and Thompson (2000) mention two models of corporate governance commonly adopted by companies. The first model is called the one-tier model or unitary system. This model is also known as the outsider model or Anglo-Saxon model and is widely adopted in, among others, the USA, the UK, and Canada. The second model is called the two-tier model or insider model. This model is generally applied in countries with the Continental European System such as Germany. It is also predominantly used in Indonesia” (Sanjaya & Setiawan, 2023). Almaqtari et al. (2026) explain that in one-tier board systems “there is a single board of directors overseeing both the management and strategic direction of the company (Belot et al., 2014; Jouber, 2021; Millet-Reyes and Zhao, 2010). The board typically includes both executive (internal) and non-executive (external) directors.” Furthermore, they explain that “in a two-tier system, two boards are present: a management board for daily operations and a supervisory board for oversight and strategic direction. The management board makes operational decisions, while the supervisory board provides oversight and strategic direction.”

Wijayanti & Setiawan (2024) state “Indonesia is a country that adheres to a dual board governance system, in which companies have two boards in their organizational structure, namely the Board of Directors (BOD) and the Board of Commissioners (BOC).” According to Law No. 40 of 2007 on Limited Liability Companies, Article 1, paragraph 2, “the company's organs are the General Meeting of Shareholders, the Board of Directors, and the Board of Commissioners.” Furthermore, in Article 1, paragraph 5, it’s explained “The Board of Directors is the Company's authorized organ and is fully responsible for managing the Company for the benefit of the Company, in accordance with the Company's purposes and objectives, and representing the Company both inside and outside the court in accordance with the provisions of the Articles of association.” The Board of Commissioners is defined by Article 1, paragraph 6, as “the Company's organ tasked with carrying out general and/or specific supervision in accordance with the Articles of association and providing advice to the Board of Directors.”

Regarding the duties of each board, the Regulation of Financial Services Authority (POJK) explains in Article 12, paragraph 1, “The Board of Directors carries out and is responsible for the management of the Issuer or Public Company in the interest of the Issuer or Public Company according to the objectives and goals of the Issuer or Public Company as set out in the corporate Articles of Association.” Furthermore, in Article 28, paragraph 1, “The Board of Commissioners supervises and is responsible for the supervision on management policies, general management, either of the Issuer or Public Company or its businesses, and provide advice to the Board of Directors.” (POJK No. 33/POJK.04/2014). Additionally, Nugraha & Soewarno (2022) explain “Indonesian companies have both boards of directors and the board of executives. The board of commissioners in Indonesia has the same function as the board of executives in other countries. In contrast, the board of executives in Indonesia has the same function as the top management in other countries. The shareholders elect the members of these two boards. The board of commissioners performs advisory and supervisory roles on the board of directors, which consists of non-independent and independent members and is led by a president commissioner who is comparable to the chairman of the board in the context of a unified board structure. The board of

executives performs day-to-day management activities. This board is relatively similar to the top management team in a country that adheres to a ‘one-tier system.’”

In the board characteristics literature, the board is commonly viewed as a governance body responsible for both oversight and strategic decision-making. Arhinful et al. (2024) explain that “The board of directors is crucial to a business's success as they set and monitor the company's strategic direction, governance structure, environmental management, and social interaction with the community in which they operate.” Similarly, Menicucci & Paolucci (2022) state that “directors are responsible for focusing on corporate responsibility and business ethics, improving company culture, supervising the achievement of strategic goals, and approving the system of corporate governance (CG),” and that “the characteristics and the composition of the BoD are crucial in defining strategic decision making concerning ESG dimensions and socially responsible behaviors.” Furthermore, Pane & Nainggolan (2024) state that “The integration and implementation of sustainability at the firm greatly depends on the corporate leadership, as seen by the composition of the BOD (Board of Directors) and BOC (Board of Commissioners).”

Kusumastati et al. (2022) states “previous research has identified several characteristics of the board of commissioners and board of directors that can support the monitoring and executive functions,” the board characteristics studied in this research are board size, board independence, board overseas educational background, and board age diversity.

2.1.5.1 Board Size

Regarding the composition of boards in Indonesia, Law No. 40 of 2007 on Limited Liability Companies explains in Article 92 paragraph 3–4 that “the company's Board of Directors consists of 1 (one) or more members of the Board of Directors. Companies whose business activities involve collecting and/or managing public funds, companies that issue debt acknowledgments to the public, or public companies must have at least 2 (two) members of the Board of Directors.” Furthermore, Article 92 paragraph 5–6 states, “if the Board of Directors consists of 2 (two) or more members, the division of duties and management authority among the members of the Board of Directors shall

be determined based on a resolution of the GMS. If the GMS as referred to in paragraph (5) does not determine this, the division of duties and authority of the members of the Board of Directors shall be determined based on a resolution of the Board of Directors.” In addition, Article 97 paragraph 3–4 explains that “each member of the Board of Directors is fully and personally responsible for any losses to the Company if he or she is guilty or negligent in carrying out his or her duties in accordance with the provisions referred to in paragraph (2). If the Board of Directors consists of 2 (two) or more members, the liability referred to in paragraph (3) shall apply jointly and severally to each member of the Board of Directors.”

Regarding the Board of Commissioners, Article 108 paragraph 3–5 states that “The Board of Commissioners consists of one or more members. A Board of Commissioners consisting of more than one member constitutes a panel, and each member of the Board of Commissioners cannot act independently but rather must act based on the Board of Commissioners' decisions. Companies whose business activities involve collecting and/or managing public funds, companies issuing debt acknowledgments to the public, or public companies must have at least two members of the Board of Commissioners.” Furthermore, Article 114 paragraph 3–4 explains that “each member of the Board of Commissioners is personally liable for losses to the Company if they are guilty or negligent in carrying out their duties as referred to in paragraph (2). If the Board of Commissioners consists of two or more members, the liability referred to in paragraph (3) shall apply jointly and severally to each member of the Board of Commissioners” (Law No. 40 of 2007 on Limited Liability Companies).

Regarding variations in board size, Akbar & Suranta (2024) state that “a board of directors' size can have a significant impact on its effectiveness.” Furthermore, “Coles et al. (2008) show that the appropriate size of the board depends on the level of complexity of the firm: larger boards are more appropriate for firms that require greater advisory inputs from the board” (Treepongkaruna et al., 2024). Similarly, “Dalton et al. (1999) argue that larger boards function better in their advisory role” (Treepongkaruna et al., 2024). Akbar & Suranta (2024) further explain that “larger

boards may have the advantage of representing a wider range of perspectives and sharing the workload, but they may also face challenges in engaging each member and scheduling meetings. Conversely, people often observe smaller boards as more collaborative and effective in managing oversight.” Likewise, Arhinful et al. (2024) state that “for example, a larger board consisting of individuals from different backgrounds may be more effective in representing the interests of many stakeholders.” In addition, “board size may play an important role in promoting corporate transparency” (Chouaibi et al., 2022). Similarly, Arhinful et al. (2024) state that “the size of a board plays a critical role in mitigating conflicts of interest between company managers, who control resources, and shareholders, who typically lack direct oversight.” However, “yet, larger boards are susceptible to social loafing and/or demand higher coordination efforts (Jensen, 1993). Thus, larger boards are less effective in reaching a cohesive decision” (Treepongkaruna et al., 2024).

Previous studies conducted in countries adopting a one-tier board system commonly measure board size based on the number of directors serving on the board. Treepongkaruna et al. (2024) measure board size as “the number of directors on the board.” Similarly, Miranda et al. (2023) measure board size as the “total no. of members of the board of directors,” while Khornida et al. (2025) use the “total number of board directors members.” Likewise, Jeyhunov et al. (2025) measure board size as “the number of directors on the board.” Chouaibi et al. (2022) explain that “we determined the total number of directors listed as active members on the board of directors.” Similarly, Akbar & Suranta (2024) measure board size using the “number of directors on board.”

Studies conducted across countries with different governance systems often employ broader definitions of board size. Tahmid et al. (2024) measure board size as “the number of members present on the board.” Similarly, Ding et al. (2024) state that “board size is measured by the number of board members representing the board’s decision-making and oversight capacity.” Arhinful et al. (2024) measure board size using “the total number of members on the board,” while Almaqtari et al. (2026) define board size as “the total number of board members at the end of the fiscal year.”

Therefore, according to Ding et al. (2024), board size can be calculated in the following formula:

$$BS = \sum BoD \quad (2.1)$$

Description :

BS : Board Size

BoD : Board of Directors' members

In the Indonesian context, several prior studies have measured board size using the Board of Commissioners. Andani & Setyawan (2025) measure board size using “ $\sum$ Company Board of Commissioners.” Similarly, Kholillulloh et al. (2025) use the “size of the board of commissioners,” while Silvia & Hadiyati (2026) measure board size using “the size of the board of commissioners.”

According to Andani & Setyawan (2025), board size can be measured with the following formula:

$$BS = \sum BoC \quad (2.2)$$

Description :

BS : Board Size

BoC : Board of Commissioners' members

Another approach previous Indonesian studies have taken to measure board size utilizes both the Board of Directors and Board of Commissioners. Fajarwati & Witiastuti (2022) stated “board size is the number of members of the board of directors and commissioners in a company (Sari & Ardiana, 2014).” Similarly, Kusumawardani (2021) measures board size as “the number of members of the board of directors and commissioners in a company.” Likewise, Hidayah & Ratmono (2025) uses the “number of directors and commissioners.”

According to Kusumawardani (2021), board size can be measured with the following formula:

$$BS = \sum BoD + \sum BoC \quad (2.3)$$

Description :

BS : Board Size

BoD : Board of Directors' members

BoC : Board of Commissioners' members

2.1.5.2 Impact of Board Size on ESG Performance

Several studies have found that board size is significantly associated with ESG performance. Jeyhunov et al. (2025) found that “board size was found to be a significant predictor of the ESG score of a firm.” However, the direction of this relationship is not always positive. Tahmid et al. (2024) found that “a larger board may enhance a firm’s environmental performance but it may negatively affect the other scores. Therefore, firms should carefully formulate the board of directors based on the necessity to improve individual or collective ESG scores accordingly.” More specifically, “for the environmental score, board size seems to have a positive significant impact whereas for the governance score it has a negatively significant impact. But for the social score, there are no definite findings.” Similarly, Miranda et al. (2023) found that “this study shows that a larger board of directors has a negative and significant influence on ESG performance.” They further explain that “the monitoring and supervision of a board of directors become more complicated when it is larger, which makes communication more difficult and influences it to become more involved in economic issues. As a result, bank members will not be as focused on environmental, social, and governance factors, negatively influencing ESG performance.” Likewise, Khornida et al. (2025) argue that “a large board size does not ensure that all board members have the necessary skills and perspectives to advance

ESG policies. Conversely, a smaller board size may be more efficient and focused on implementing concrete ESG strategies.”

Consistent with these findings, Ding et al. (2024) found that “larger board sizes in non-state-owned enterprises are associated with lower ESG performance, potentially because oversized boards in these firms hinder management efficiency and responsiveness.” Similarly, Arhinful et al. (2024) state that “smaller boards foster better collaboration among directors, encouraging teamwork, responsibility, and commitment among members.” Akbar & Suranta (2024) also found that “despite the negative correlation, board size has a significant impact on ESG performance. This implies that at whatever point an company has a huge board size, it brings down the degree of ESG execution. On the other hand, in the event that the company has a little board size, it will expand ESG execution.” Likewise, Pane & Nainggolan (2024) explain that “boards of a greater size might demonstrate disagreement or a lack of unity in terms of ESG (Environmental, Social, and Governance) priorities, perhaps resulting in diminished focus on ESG efforts. The larger the number of members on the board, the more challenging it gets to communicate effectively, which might impede the successful execution of ESG policies and initiatives.”

Several studies have found a positive relationship between board size and ESG performance. Treepongkaruna et al. (2024) found that “from a large sample of U.S. firms, we find that board size is negatively associated with ESG controversies; that is, firms with large boards exhibit fewer ESG controversies.” They further explain that “larger boards encourage stakeholder engagement in companies' decision-making processes, motivating firms to contribute to sustainability.” Similarly, Tahmid et al. (2024) state that “usually, large board sizes and greater attendance in regular board meetings improve better decision making with the coordination of all activities through which sustainability of firm performance can be ensured with all stakeholders' benefit.” Menicucci & Paolucci (2022) also argue that “it is more likely that large boards include directors having ESG expertise and a great interest in sustainability culture. Furthermore, large boards realize oversight activities more successfully, inspire a broader vision of strategic goals and, from this perspective, they also

encourage management to develop sustainability performance.” Likewise, Khornida et al. (2025) explain that “these boards are characterized by greater diversity in terms of stakeholder representation, making them more effective when they have greater workloads and responsibilities compared to smaller board sizes.” Although they also note that “a larger board size does not ensure improved ESG performance and may lead to slower decision-making processes. Board size should be tailored to the company's needs. Smaller boards can offer greater speed and efficiency in decision-making but should still include diverse skills and perspectives to support effective ESG strategies.”

Consistent with these findings, Ding et al. (2024) state that “as the company’s board size becomes more extensive, ESG controversies will decrease accordingly, and ESG strategies will be more actively implemented.” Similarly, Arhinful et al. (2024) found that “board size also showed a positive and significant influence on ESG performance across both medium and larger-sized automobile companies.” They further explain that “larger boards tend to provide more detailed ESG reports due to their greater influence and broader participation in deliberations.” Furthermore, “these findings suggest that corporations with larger boards are likely to have a wider range of perspectives, specialized knowledge, and resources to address environmental, social, and governance matters effectively. An increase in board size can lead to more comprehensive discussions, stronger decision-making processes, and enhanced oversight of ESG-related initiatives. A larger board may also facilitate greater stakeholder participation and involvement, providing a broader array of perspectives and ensuring more robust accountability in corporate sustainability efforts.”

However, not all studies found a significant relationship between board size and ESG performance. Khornida et al. (2025) found that “Board size does not have a significant impact on ESG performance.” Similarly, Ding et al. (2024) found that “attributes such as board size and gender diversity did not significantly impact ESG performance within this sample. This finding suggests that increasing board size or gender representation may not automatically lead to stronger ESG outcomes without

complementary structural or strategic adjustments.” Based on these findings, the following hypothesis is formulated:

Ha₁: Board size exerts a positive impact on ESG performance

2.1.5.3 Board Independence

“Board independence is the variable most frequently used by researchers to study the features of the board since it is a key characteristic in evaluating the tendency of firms strategic policies towards stakeholders’ interests and expectations” (Menicucci & Paolucci, 2022). According to Spadafora et al. (2022), “board independence reflects the degree to which the board of directors operates independently from powerful corporate actors.” Sanjaya & Setiawan (2023) explain that “the concept of independent directors (non executive directors) in countries applying common law is similar to the concept of independent commissioners in countries with the legal systems of Continental Europe which adopt the two-tier system.” In the Indonesian context, POJK No. 33/POJK.04/2014 Article 1 paragraph (4) defines “Independent Commissioners” as “members of the Board of Commissioners originating from outside an Issuer or a Public Company and are qualified to be independent commissioners as stipulated in this Regulation of The Financial Services Authority.” Similarly, Apriliani (2023) explains that “the definition of an Independent Commissioner is a member of the board of commissioners who is not affiliated with the board of directors, other members of the board of commissioners and controlling shareholders, and is free from business or other relationships that may affect his/her ability to act independently or act solely in the interests of the Company.” Likewise, Andani & Setyawan (2025) state that “an independent commissioner is a member of the board of commissioners from outside the company who has no business or family ties with the controlling shareholder, directors, or other commissioners.” Furthermore, Nusuki et al. (2026) explain that “independent commissioners are board members who have no financial, managerial, or familial relationships with controlling shareholders or management, so they can carry out their supervisory function without any conflict of interest.”

The proportion of independent commissioners within a company may vary according to corporate governance considerations. Apriliani (2023) states that

“referring to the laws and regulations, Independent Commissioners are mandated and recommended in companies as an effort to implement the principles of Good Corporate Governance (GCG).” Similarly, Nusuki et al. (2026) explain that “in Indonesia, the requirement for a minimum of 30% independent commissioners is regulated by the Financial Services Authority through public company regulations. The presence of independent commissioners has been proven to strengthen corporate governance.” Furthermore, “according to (Cucari et al., 2018), board independence reflects the structure of the board as it plays a crucial role in ensuring effective board oversight and serves as a link between corporate strategic policies and the interests and expectations of stakeholders” (Khornida et al., 2025).

Furthermore, Law No. 40 of 2007 on Limited Liability Companies Article 120 paragraph 1–2 states that “the company's articles of association may stipulate the existence of one or more Independent Commissioners and one Delegated Commissioner. The Independent Commissioners referred to in paragraph (1) are appointed based on a resolution of the GMS from a party unaffiliated with the major shareholder, members of the Board of Directors, and/or other members of the Board of Commissioners.” In addition, POJK No. 33/POJK.04/2014 Article 20 paragraph 2–3 states that “if the Board of Commissioners consists of 2 (two) members, 1 (one) of them shall be an Independent Commissioner. (3) If the Board of Commissioners consists of more than 2 (two) members, the number of Independent Commissioners should be accounted for at least 30% (thirty percent) of the total number of members of the Board of Commissioners.”

According to Jafar et al. (2024) “existing empirical evidence generally supports the hypothesis that controlling opportunistic behavior and safeguarding shareholder rights are more effective when there is a higher proportion of independent commissioners on the board of directors (Mazzotta & Veltri, 2014).” Similarly, Tanujaya et al. (2026) state “boards with a higher proportion of independent commissioners also tend to be more attentive to stakeholder demands. Their presence reduces the likelihood of opportunistic behavior and encourages companies to communicate more openly about their non-financial performance.” However,

Khornida et al. (2025) note that “an excessive number of independent board members can diminish the quality and effectiveness of the company's ESG policies.”

In the Indonesian context, board independence is commonly measured using the proportion of independent commissioners serving on the Board of Commissioners. Kholillulloh et al. (2025) measure board independence using the “proportion of independent board of commissioners.” Similarly, Sari (2025) uses the “proportion of the number of independent commissioners.” Likewise, Mahsina & Soewarno (2024) measure board independence as “number of independent commissaries/ total commissaries.” Furthermore, Pane & Nainggolan (2024) measure board independence using “the ratio of independents on the board of commissioners.”

Conversely, according to Mahsina & Soewarno (2024), board independence can be measured with the following formula:

$$BI = \frac{\sum IC}{\sum BoC} \quad (2.4)$$

Description :

BI : Board Independence

ID : Independent commissioners

BoC : Board of Commissioners' members

2.1.5.4 Impact of Board Independence on ESG Performance

Several studies have found that board independence is significantly associated with ESG performance. Tahmid et al. (2024) found that “board independence has a strong significance with the ESG performance of the firm.” However, Khornida et al. (2025) found that “board independence has a negative effect on ESG performance.” They further explain that “this finding suggests that while independent board members are necessary for good oversight, having too many of them might reduce the board's overall effectiveness in driving sustainable ESG policies.”

Several studies have found a positive relationship between board independence and ESG performance. Ding et al. (2024) found that board independence and other governance attributes “emerge as particularly influential factors, significantly enhancing ESG performance.” Similarly, Arhinful et al. (2024) found that “independent board members demonstrated a positive and significant influence on ESG performance.” They further explain that “their oversight role includes constructive critique and ensuring management compliance with the board's governance framework and risk tolerance, positively impacting ESG performance.” Likewise, Miranda et al. (2023) found that “in terms of board independence, a positive and significant impact on ESG performance was evidenced.” They further explain that “regarding independent members, these have a greater awareness of stakeholder interests and environmental and social issues, so they lead managers to pay attention to ESG practices in decision-making, encouraging them to adopt socially responsible behaviors.”

However, not all studies found a significant relationship between board independence and ESG performance. Kholillulloh et al. (2025) found that “the board independence variable shows a positive but insignificant influence.” Likewise, Nurmasari et al. (2026) found that “the Independent Board Member variable shows no significant effect on ESG performance at the aggregate level.” Based on these findings, the following hypothesis is formulated:

Ha₂: Board independence exerts a positive impact on ESG performance

2.1.5.5 Board Overseas Educational Background

Overseas educational background is closely related to overseas experience and educational attainment. Chen et al. (2026) explain that “overseas experience of board members (BOE) refers to directors’ prior education or professional employment abroad.” Similarly, Feng & Ma (2025) state that “executives with overseas backgrounds are specifically those who have studied or worked in countries or regions outside mainland China.” Furthermore, “executives with overseas backgrounds refer to senior corporate decision-makers—such as CEOs, CFOs, or board members—who have obtained educational degrees or held professional positions in foreign countries.

These experiences shape their values, cognitive frameworks, and strategic decision-making preferences.” More specifically, Ding et al. (2024) define overseas educational background as “the proportion of independent directors with overseas educational experience, capturing the board’s exposure to global perspectives and practices.” Likewise, Jeyhunov et al. (2025) define foreign education as the “percentage ratio of directors who have studied abroad.” Regarding the role of educational background, Kusumawardhani et al. (2026) explain that “CEO education refers to the formal educational background undertaken by a CEO,” and that “a CEO’s educational background serves as an indicator of cognitive capability.”

The proportion of board members with overseas educational backgrounds may increase because overseas education and international exposure are associated with broader knowledge, sustainability awareness, and global perspectives. Ding et al. (2024) explain that “when companies have directors with an international educational background, their ideas are often more advanced and open than those with a local educational background.” Furthermore, “business decision-makers with overseas education have gained knowledge and experience in corporate sustainability in different cultural contexts,” and “senior management with an overseas education background is more familiar with the early adoption of ESG principles in developed countries.” Similarly, Jeyhunov et al. (2025) state that “an international student educated in a society with higher sustainability norms will be more familiar with and informed about sustainability issues,” and that “educational and cultural experience affect the director’s stance toward corporate sustainability.” In addition, Feng & Ma (2025) explain that “executives with overseas backgrounds typically receive more systematic international training and are well-versed in the high standards and best practices of internal control and governance established in developed countries.” Consequently, “they are able to integrate these experiences into corporate management, thereby facilitating the optimization of firms’ internal control systems.”

Likewise, Zou et al. (2025) explain that “exposure to stakeholder-centric governance models prevalent in Western markets—where climate transparency is increasingly tied to market access and investor trust—cultivates an international

strategic vision.” They further state that “executives with overseas experience often exhibit a high level of concern for environmental issues and climate risks,” while “renowned overseas universities, particularly those that accord significant importance to corporate social responsibility and sustainability education, facilitate this process through the provision of relevant courses and extensive case studies.” As a result, “when management pays high attention to climate issues, it will be more proactive in collecting and organizing information related to corporate climate risk and disclosing it comprehensively and accurately to stakeholders, so as to enhance the transparency of corporate response to climate risk, shape a good corporate image, and promote sustainable corporate development.” Similarly, Zheng & Jin (2023) argue that “executives with overseas experience can encourage enterprises to be willing to accept environmental protection behavior, actively meet their legitimacy, consider the interests of stakeholders, optimize resource allocation efficiency, and improve the value realization of green investment.”

In addition, Arhinful et al. (2024) state that “board education contributes to developing an engaged and well-informed board.” Similarly, EmadEldeen et al. (2025) explain that “managers with higher education and extensive training in CSR and strategic management bring capabilities that would improve cognitive foundations.” Likewise, Ghardallou (2022) states that “the greater the level of education, the greater the awareness of environmental protection.”

Previous studies have employed various approaches to measure overseas educational background and overseas experience. Chen et al. (2026) explain that “we construct the board-level BOE measure as the count of overseas-experienced board members divided by board size.” Similarly, Ding et al. (2024) state that “the ratio of the total number of independent directors with overseas education backgrounds in the listed company to the total number of independent directors on the company’s board of directors in that year is measured.” Likewise, Jeyhunov et al. (2025) measure foreign education using the “percentage ratio of directors who have studied abroad.” Feng & Ma (2025) explain that “two measures are used to capture this variable: (1) Whether the firm has appointed any executives with overseas backgrounds (denoted

as $oversea_1$); (2) the proportion of executives with overseas backgrounds within the executive team (denoted as $oversea_ratio$).” More specifically, they measure “whether the firm has appointed executives with overseas backgrounds (1 = yes, 0 = no)” and the “proportion of executives with overseas backgrounds within the management team.” Similarly, Zou et al. (2025) “defined the indicators of executive overseas experiences using three variables: a dummy variable indicating whether the executive team had members with overseas experience, the natural logarithm of the number of executives with overseas experience in the executive team and the proportion of executives with overseas experience.”

Therefore, according to Chen et al. (2026), can be calculated with the following formula:

$$BB = \sum OEB \quad (2.5)$$

Description :

BB : Board Overseas Educational Background

OEB : Overseas educated board members

According to Feng & Ma (2025), another method to measure board overseas educational background is with a dummy variable where 1, if there is at least one overseas educated board member, 0 otherwise.

Finally, according to Jeyhunov et al. (2025), board overseas educational background can be calculated as follows:

$$BB = \frac{\sum OEB}{BS} \quad (2.6)$$

Description :

BB : Board Overseas Educational Background

OEB : Overseas educated board members

BS : Board Size

In this study, overseas education refers specifically to education obtained in countries demonstrating a higher level of sustainability implementation than Indonesia. To ensure an objective classification, countries are considered to have a higher level of sustainability implementation when they rank above Indonesia in the annual Sustainable Development Goal (SDG) Index published by the Sustainable Development Solutions Network (SDSN), a non-profit organization established under the auspices of the United Nations (UN), during the relevant year of measurement. Sachs et al. (2023) explain “the SDG Index and Dashboards track the annual progress of all 193 UN Member States towards the SDGs.” Furthermore, “the dashboard and trend arrows help identify priorities for further actions and indicate whether countries are on track or off track to achieve the goals and targets by 2030, based on latest trend data.” The SDG Index referenced in this study can be seen in Attachment 6.

2.1.5.6 Impact of Board Overseas Educational Background on ESG Performance

Wahyuningrum et al. (2025) found “the educational background of board members has a significant negative effect on disclosure levels, suggesting that higher education does not necessarily translate into greater environmental transparency,” which “may reflect a disconnect between traditional business or finance education and environmental governance priorities in the Indonesian corporate context.” Additionally, multiple studies found an insignificant relationship between overseas educational background, educational attainment, and ESG performance. B. Setiawan & Yusup (2025) found that nationality diversity “does not directly correlate significantly with ESG score.” They further found that “the influence of ND on the ESG score is insignificant. It concludes that having foreign directors on the board will not positively impact ESG scores.” Similarly, Kalfira & Shanti (2025) found that “the findings show that CEO education and ownership power have no significant effect on ESG performance.”

Contrastingly, several studies have found a positive relationship between overseas educational background, educational attainment, and ESG performance.

Arhinful et al. (2024) found that “the educational background of board members in both medium and larger-sized automobile companies demonstrated a positive and significant influence on ESG performance” They further explain that “these findings suggest that corporations benefit from having highly educated boards capable of effectively addressing environmental, social, and governance issues.” Similarly, Ding et al. (2024) found that independent directors with overseas educational backgrounds “emerge as particularly influential factors, significantly enhancing ESG performance.” They further explain that “independent directors with global perspectives are better attuned to sustainable business practices and provide valuable guidance for ESG-related strategies.”

Likewise, Jeyhunov et al. (2025) found that “the results show a positive and statistically significant relationship,” “indicating that firms with a higher percentage of directors educated overseas exhibit better ESG performance.” Furthermore, “the overseas education of directors was found to be positively associated with ESG performance.” Similarly, Feng & Ma (2025) found that “executives with overseas backgrounds can promote corporate ESG performance,” that “executives with overseas backgrounds significantly enhance ESG performance,” and that “firms employing executives with overseas backgrounds exhibit significantly better ESG performance.” Consistent with these findings, Zou et al. (2025) found that “executive overseas experience significantly enhances CCRD.” Likewise, Ghardallou (2022) found that “CEOs with an MBA are more likely than other CEOs to disclose corporate environmental performance.” Based on these findings, the following hypothesis is formulated:

Ha₃: Board overseas educational background exerts a positive impact on ESG performance

2.1.5.7 Board Age Diversity

Menicucci & Paolucci (2022) state that “board age is one of the most observable diversity attributes because it expresses the influence of different generations, and therefore of different values, motivational goals, culture, habits and experiences on the decision-making approach assumed by the directors.” Similarly, Sihombing et al.

(2025) explain that “board age is one of the easiest diversity factors to see since they represent the influence of different generations.” Furthermore, “board age, defined as the average age of directors or the variation in age among board members, represents a key dimension of board diversity that significantly influences governance dynamics.” Likewise, Arifiona & Wahyundaru (2026) state that “Board Age Diversity is also used to measure cognitive, informational, and value differences among board members, particularly because younger members have different perspectives and experiences than more senior members.” Regarding its role as a diversity attribute, Maier & Yurtoglu (2022) explain that “directors’ age can be a source of diversity on boards; however, compared with other dimensions (i.e., gender, nationality, and ethnicity), it has attracted limited attention in the study of boards.”

The level of board age diversity may increase because directors from different age groups contribute distinct experiences, perspectives, and resources to the board. Jeyhunov et al. (2025) explain that “age serves as an indicator of an individual’s life experience and it can have a significant impact on the formation of personal values.” Furthermore, “having diverse age groups on the boards will bring various perspectives to the table given their unique life experience, affecting the decision-making process on boards.” Similarly, EmadEldeen et al. (2025) state that “they also bring more expertise, extensive networks, and social capital to the board. In contrast, younger directors are believed to be more receptive to new ideas, more creative, and more likely to seek alternatives to the status quo.” They further explain that “the board may effectively respond to the diverse interests and expectations of various stakeholders by addressing both classic and new techniques with the participation of both older and younger directors.” Likewise, “the diverse resources and generational insights that come with age diversity could enhance the board’s ability to secure critical resources and enrich the decision-making processes to yield better sustainability outcomes” (EmadEldeen et al., 2025). Consistent with this view, Jeyhunov et al. (2025) state that “the age diversity of a board can enhance ESG performance by bringing distinct knowledge, experience, and networks.” Similarly, Menicucci & Paolucci (2022) explain that “different age clusters in a board can also be favorable for the understanding of ESG issues and the improvement of ESG attitudes.”

However, board age diversity may also present challenges. EmadEldeen et al. (2025) explain that “older directors may be resistant to innovation and prefer to maintain using the traditional way, and they are limited in information processing because of the reduced energy levels.” Similarly, Jeyhunov et al. (2025) state that “age diversity in our case, can disrupt the sense of group harmony and conformity through conflicts stemming from differences in the personal values of directors of different ages.” Likewise, Herlambang (2024) explains that “age differences can lead to differences in decision-making due to differences in experience and time zones of leadership.”

Several studies measure board age using the average age of board members. EmadEldeen et al. (2025) measure board age using the “average age in years of all directors.” Similarly, Maier & Yurtoglu (2022) use “the average director age.” Likewise, Menicucci & Paolucci (2022) measure board age using “the average age of the board.” Consistent with these studies, Tang & Chrisna (2025) use the “average age of board members,” while Herlambang (2024) measures board age using the “average age of a company's board.”

Therefore, according to EmadEldeen et al. (2025), board age diversity can be measured through the average age of board directors, which can be calculated as follows:

$$BAD = \frac{\sum BA}{BS} \quad (2.7)$$

Description :

BAD : Board Age Diversity

BA : Board members' age

BS : Board size

Other studies measure board age diversity using diversity indices. Jeyhunov et al. (2025) explain that they “used Blau’s index of heterogeneity to measure the age

diversity on the board. There are six age categories: less than 40 years old, 40 to 49, 50 to 59, 60–69, 70–79, and 80 years and older.” They further explain that “the higher the number of age categories on the board, the greater the age diversity of the board.” Furthermore, “in our case, 0 indicates that all directors belong to the same age group (minimum board diversity), whereas 1 indicates that all directors are from different age groups (maximum board diversity).” Similarly, Wijayanti & Setiawan (2024) state that “each element is calculated using the Blau Index, which effectively captures the diversity exhibited within each characteristic. The resulting composite index value ranges from 0 to 1, with a value closer to 1 indicating a higher level of diversity.”

According to Jeyhunov et al. (2025), board age diversity can be calculated using the standardized Blau Index:

$$\text{BAD} = \frac{1 - \sum_{i=1}^n P_i^2}{1 - \frac{1}{n}} \quad (2.8)$$

Description :

BAD : Board Age Diversity

n : Number of age categories

i : Age category

P_i : Proportion of the group that belongs to category i

2.1.5.8 Impact of Board Age Diversity on ESG Performance

Several studies have found a negative relationship between board age diversity and ESG performance. Jeyhunov et al. (2025) found that “the results reveal a negative and statistically significant relationship.” More specifically, “higher age diversity is negatively associated with ESG scores. In other words, the higher the proportion of different age groups on boards, the lower the ESG performance of the firm.” Similarly, they “explored the influence of age diversity on ESG performance, finding a

significant negative association.” They further explain that “age diversity within boards negatively affects the overall ESG performance of a firm due to conflicting views and a lack of group cohesion.” Likewise, Herlambang (2024) states that “Buse et al. (2016), Torchia et al. (2015), and Mardini and Lahyani (2020) concluded that board age negatively impacts ESG performance assessments.” They explain, “this is because, as directors gain more experience in the business world, they become more convinced that improving ESG performance is not crucial based on their previous managerial experience.”

Several studies have found a positive relationship between board age diversity and ESG performance. EmadEldeen et al. (2025) found that “there is a significant positive influence of age diversity on governance in companies with low sustainability.” Furthermore, “in the medium-sustainability companies, age diversity has a significant positive effect on the governance and social pillars.” Similarly, Jeyhunov et al. (2025) explain that “the age diversity of a board can enhance ESG performance by bringing distinct knowledge, experience, and networks.” Likewise, Menicucci & Paolucci (2022) state that “different age clusters in a board can also be favorable for the understanding of ESG issues and the improvement of ESG attitudes.”

However, not all studies found a significant relationship between board age diversity and ESG performance. Menicucci & Paolucci (2022) found that “our results show no significant relationship.” Furthermore, “hence, the findings demonstrate that banks with a better ESG performance do not inevitably have an older board.” Similarly, Sihombing et al. (2025) found that “board age does not influence the ESG performance.” They further explain that “this is because while older board members are typically assumed to have greater experience due to their age, they often lack specialized ESG knowledge or certifications, resulting in board age has no influence on ESG performance.” Likewise, EmadEldeen et al. (2025) explain that “the absence of influence could have occurred because of the complexity of the ESG issues that appear to go beyond age diversity to include knowledge and industry experience that is significant for strategy formulation.” Furthermore, “in high-sustainability companies, although age diversity tends to have a positive influence on the social

pillar, it has an insignificant effect on the environmental and governance pillars.” Based on these findings, the following hypothesis is formulated:

Ha4: Board age diversity exerts a positive impact on ESG performance

2.1.6 Firm Value

“Firm value primarily refers to the overall performance of a company, as measured by financial and market indicators, encompassing various related dimensions such as firm performance and corporate performance within the scope of this study” (Li et al., 2024). Firm value “represents the total worth of a company as determined by the market, investors, and other stakeholders, often measured by stock price and market capitalization, reflecting expectations of future cash flows, growth prospects, and risk factors” (Bukari et al., 2024). Anisa & Panuntun (2025) explains “firm value serves as a key indicator of a company’s success in generating shareholder wealth,” while Rahmawati & Sarwono (2025) state “firm value indicates how the market views a company's business prospects and risks.”

According to Wahyuni (2025), “several studies demonstrate that Tobin’s Q has significant power in assessing firm value because it integrates both market value and book value of assets, thereby reflecting investor perceptions of an entity’s future growth prospects.” Similarly, Rahmawati & Sarwono (2025) state that “companies with a Tobin's Q value greater than 1 are considered to have the potential to grow significantly and successfully manage assets.”

According to Ross et al. (2023), “there are market value measures that can be used to determine firm value:”

1) “Price-Earnings ratio”

“PE ratio measures how much investors are willing to pay per dollar of current earnings.”

2) “Price-Sales ratio”

“In some cases, companies will have negative earnings for extended periods, so their PE ratios are not very meaningful. A good example is a recent start-up.

Such companies usually do have some revenues, so analysts will often look at the price-sales ratio.”

3) “Market-to-Book ratio”

“The market-to-book ratio compares the market value of the firm’s investments to their cost.”

4) “Tobin’s Q ratio”

“Tobin’s Q ratio, is much like the market-to-book ratio. Tobin’s Q is the market value of a firm’s assets divided by their replacement cost.”

5) “Enterprise Value-EBITDA”

“This multiple is similar in spirit to the PE ratio, but it relates the value of all the operating assets (the enterprise value) to a measure of the operating cash flow generated by those assets (EBITDA).”

Ross et al. (2023) interpret that “conceptually, the Q ratio is superior to the market-to-book ratio because it focuses on what the firm is worth today relative to what it would cost to replace it today. Firms with high Q ratios tend to be those with attractive investment opportunities or significant competitive advantages (or both). In contrast, the market-to-book ratio focuses on historical costs, which are less relevant.” Thus, this research uses Tobin’s Q as a proxy for firm value measurement. Priyanto & Suhandi (2023) explain “Tobin’s Q captures a firm’s existing assets and future growth potential. Tobin’s Q also captures investors’ expectations of future events, including evaluations of current business strategies.” In alignment to this, Chams et al. (2021) state “using a market-based indicator, Tobin’s Q is considered to be the most recommended metric for long-term financial performance, capturing the market valuation of future cash flow prospects.”

Regarding measurement, there vary interpretations on the calculation of Tobin’s Q, which can be calculated with “two equivalent numerators: the market value of the firm’s assets and the market value of its debt and equity.” In their similar research, Priyanto & Suhandi (2023), “Tobin’s Q is the ratio of the market value of the company’s outstanding shares and debt divided by the replacement cost of the company’s assets or book value.”

According to Priyanto & Suhandi (2023), firm value can be calculated using the following Tobin's Q formula:

$$FV = \frac{\text{Market Value of Equity} + \text{Debt}}{\text{Total Asset Value}} \quad (2.9)$$

Description	:
FV	: Tobin's Q
Market Value of Equity	: Market Value of Equity
Debt	: Total Liabilities
Total Asset Value	: Total Assets

According to Weygandt et al. (2022) "assets are resources a business owns. The business uses its assets in carrying out such activities as production and sales. The common characteristic possessed by all assets is the capacity to provide future services or benefits. In a business, that service potential or future economic benefit eventually results in cash inflows (receipts)." Kieso et al. (2024) explains the 2 categories of assets:

1) "Current Assets"

"Current assets are cash and other assets a company expects to convert into cash, sell, or consume either in one year or in the operating cycle, whichever is longer." Furthermore, "these assets are generally presented in the following order:"

a) "Inventories"

"Inventories are asset items that a company holds for sale in the ordinary course of business, or goods that it will use or consume in the production of goods to be sold."

b) "Prepaid Expenses"

"Assets paid for and recorded before a company uses them are called prepaid expenses."

- c) "Receivables"

"Receivables (often referred to as loans and receivables) are claims held against customers and others for money, goods, or services."
 - d) "Short-term investments"

"A company should report trading securities (whether debt or equity) as current assets."
 - e) "Cash and cash equivalents"

"Cash is generally considered to consist of currency and demand deposits (monies available on demand at a financial institution). Cash equivalents are short-term, highly liquid investments that will mature within three months or less."
- 2) "Non-Current Assets"
- "Non-current assets are those not meeting the definition of current assets. They include a variety of items:"
- a) "Long-Term Investments"

"Long-term investments, often referred to simply as investments, normally consist of one of four types:"

 - i) "Investments in securities, such as bonds, ordinary shares, or long-term notes."
 - ii) "Investments in tangible assets not currently used in operations, such as land held for speculation."
 - iii) "Investments set aside in special funds, such as a sinking fund, pension fund, or plant expansion fund."
 - iv) "Investments in non-consolidated subsidiaries or associated companies."
 - b) "Property, Plant, and Equipment"

"Property, plant, and equipment are tangible, long-lived assets used in the regular operations of the business. These assets consist of physical property such as land, buildings, machinery, furniture, tools, and wasting resources (minerals)."

c) “Intangible Assets”

“Intangible assets lack physical substance and are not financial instruments. These identifiable assets include patents, copyrights, franchises, trademarks, trade names, and customer lists.”

d) “Other Assets”

“The items included in the section “Other assets” vary widely in practice. Some include items such as long-term prepaid expenses and non-current receivables. Other items that might be included are assets in special funds, property held for sale, and restricted cash or securities.”

According to Weygandt et al. (2022), “liabilities are claims against assets—that is, existing debts and obligations. Businesses of all sizes usually borrow money and purchase merchandise on credit.” Kieso et al. (2024) explain that “because liabilities involve future disbursements of assets or services, one of their most important features is the date on which they are payable. A company must satisfy currently maturing obligations in the ordinary course of business to continue operating. Liabilities with a more distant due date do not, as a rule, represent a claim on the company’s current resources. They are therefore in a slightly different category. This feature gives rise to the basic division of liabilities into:”

1) “Non-Current Liabilities”

“Non-current liabilities are obligations that a company does not reasonably expect to liquidate within the longer of one year or the normal operating cycle. Instead, it expects to pay them at some date beyond that time.” Furthermore, “Generally, non-current liabilities are of three types:”

- a) “Obligations arising from specific financing situations, such as the issuance of bonds, long-term lease obligations, and long-term notes payable.”
- b) “Obligations arising from the ordinary operations of the company, such as pension obligations and deferred income tax liabilities.”

- c) “Obligations that depend on the occurrence or non-occurrence of one or more future events to confirm the amount payable, or the payee, or the date payable, such as service or product warranties, environmental liabilities, and restructurings, often referred to as provisions.”

2) “Current Liabilities”

“Current liabilities are the obligations that a company generally expects to settle in its normal operating cycle or one year, whichever is longer. This concept includes:”

- a) “Payables resulting from the acquisition of goods and services: accounts payable, salaries and wages payable, income taxes payable, and so on.”
- b) “Collections received in advance for the delivery of goods or performance of services, such as unearned rent revenue or unearned subscriptions revenue.”
- c) “Other liabilities whose liquidation will take place within the operating cycle or one year, such as the portion of long-term bonds to be paid in the current period, short-term obligations arising from purchase of equipment, or estimated liabilities, such as a warranty liability. As indicated earlier, estimated liabilities are often referred to as provisions.”

Weygandt et al. (2022) explain “the ownership claim on a company’s total assets is equity. It is equal to total assets minus total liabilities.” Furthermore, they explain this is because “the assets of a business are claimed by either creditors or shareholders. To find out what belongs to shareholders, we subtract creditors’ claims (the liabilities) from the assets. The remainder is the shareholders’ claim on the assets—equity. It is often referred to as residual equity—that is, the equity “left over” after creditors’ claims are satisfied.” According to Kieso et al. (2024), “equity is the residual interest in the assets of the company after deducting all liabilities. Equity is often referred to as shareholders’ equity, stockholders’ equity, or corporate capital.” Moreover “companies usually divide the section into six parts:”

1) “Share capital.”

“The par or stated value of shares issued. It includes ordinary shares (sometimes referred to as common shares) and preference shares (sometimes referred to as preferred shares).”

2) “Share premium.”

“The excess of amounts paid-in over the par or stated value.”

3) “Retained earnings.”

“The company’s undistributed earnings.”

4) “Accumulated other comprehensive income.”

“The aggregate amount of the other comprehensive income items.”

5) “Treasury shares.”

“Generally, the amount of ordinary shares repurchased.”

6) “Non-controlling interest.”

“A portion of the equity of subsidiaries not owned by the reporting company.”

Berk & DeMarzo (2023) states “the total market value of a firm’s equity equals the number of shares outstanding times the firm’s market price per share.” They further illustrate that market value of equity can be calculated using the following formula:

$$\text{Market Value of Equity} = \text{Shares outstanding} \times \text{Market price per share} \quad (2.10)$$

Description

:

Market Value of Equity

: Market Value of Equity

Shares outstanding

: Outstanding shares

Market price per share

: Closing share price

According to Weygandt et al. (2022) “the term outstanding shares means the number of issued shares that are being held by shareholders.” In terms of share market price, IDX (2021) define “opening price is the price formed during the pre-opening session. Closing price is the price formed during the pre-closing session or the last trading price if no price was formed during the pre-closing session. Previous price is

the closing price on the previous trading day.” This study uses closing price to calculate the market value of equity.

According to Ishaq et al. (2021), “more the value of the shareholders equity, replacement cost in this instance would inflate Tobin’s Q. Higher value of total physical assets (replacement cost) implies market value of the equity will be less than one thus yielding an undervalued Tobin’s Q.” Similarly, Zarefar & Armadani (2024) state that “a high Tobin's Q can be considered as a signal that the company is making efficient investments and generating added value greater than its asset cost.” Berk & DeMarzo (2023) further explain that “the market value of a stock does not depend on the historical cost of the firm’s assets; instead, it depends on what investors expect those assets to produce in the future.” Likewise, Wahyuni (2025) states that “firm value is often associated with stock prices, since rising stock prices can indicate improved company performance and contribute to shareholder wealth.” According to Ana & Wibowo (2025), “the calculation parameters in the Tobin's formula are categorized as follows:”

- 1) “Tobin's $Q < 1$, undervalued, low investment growth potential.”
- 2) “Tobin's $Q > 1$, overvalued, high investment growth potential.”
- 3) “Tobin's $Q = 1$, average, stagnant investment growth potential.”

Wahyuni (2025) states that “appropriate asset management strategies, operational efficiency, and information transparency are key factors for maintaining strong company value that remains attractive to investors.” Similarly, Ishaq et al. (2021) explain that “operational performance can be taken as the ability of management to maximize the shareholders wealth by improving the market value of the share price through successful business operations.” Furthermore, “an ideal manager is one, maximizing the firm’s market value of its invested capital, thus leading to improvement in market share price and the value of firm’s total physical assets” (Ishaq et al., 2021). In addition, Ishaq et al. (2021) explain that “good corporate governance helps companies operate more efficiently, improves access to capital, mitigate risk and safeguard against mismanagement to build stakeholders confidence. It makes companies more accountable and transparent to investors thus, serving as tool

to respond to stakeholders' concerns. Firms with more shareholders rights are better governed as shareholders influence managers to create value for them which in turn impacts Tobin's Q (Gompers and Metrick, 2003)." Strike et al. (2022) also state that "the main factors explaining investment behavior are managerial discretion or power, financial constraints, uncertainty, and access to external sources of finance."

Conversely, Wahyuni (2025) states that "inefficient asset management in the majority of industrial sector companies can directly impact low company value, as reflected by Tobin's Q ratios below one." Regarding financing decisions, Alatishe (2026) explains that "while access to debt may be necessary for financing investment in capital-intensive industries, excessive reliance on borrowed funds undermines shareholder value and erodes firm competitiveness." Similarly, Adebayo et al. (2024) state that "investors may become concerned about the firm's capacity to fulfill its debt commitments, resulting in reduced confidence and a lower share price."

Berk & DeMarzo (2023) explain that "successful firms are often able to borrow in excess of the book value of their assets because creditors recognize that the market value of the assets is far higher than the book value. Thus, it is not surprising that the book value of equity will often differ substantially from the amount investors are willing to pay for the equity." Likewise, Budyastuti & Supriatiningsih (2023) state that "stock price is one indicator of successful company management. If a company's stock price consistently rises, investors or potential investors consider the company to be successful in managing its business. Investor or potential investor trust is very beneficial for a company because the more people believe in a company, the stronger the desire to invest in it. Greater demand for a company's shares can increase its share price. If a high stock price can be maintained, investor or potential investor confidence in the company will also increase, which can increase the company's value. Conversely, if the stock price continues to decline, it can reduce the company's value in the eyes of investors or potential investors."

2.1.7 Impact of Firm Value on ESG Performance

Chams et al. (2021) argue that "no conclusive inference can be induced in regard to Tobin's Q and its effect on ESG performances. The theoretical implications of this

study call for attention to the fact that not all financial indicators (i.e., future market performance as measured by the Tobin's Q) are able to lead to consistent sustainable investment in all instances." Likewise, Priyanto and Suhandi (2023) report that "our first hypothesis assumed a positive relationship between company value and ESG performance, but the statistical results showed the opposite, meaning the hypothesis was rejected. The negative relationship between Tobin's Q and ESG Performance suggests that companies with higher market valuations may prioritize shareholder value over ESG considerations. A high Q ratio can indicate an emphasis on maximizing financial returns for shareholders." Consistent with this finding, Putra & Primacintya (2024) conclude that "hypothesis testing shows that firm value has a negative impact on ESG. High firm value will result in a low ESG value."

In contrast, other studies provide evidence of a positive relationship between firm value and ESG performance. Rahmawati & Sarwono (2025) find that "it was found that firm value has a positive and significant impact on Environmental, Social, and Governance scores." They further explain that "the results show that companies with higher values tend to be more aware of and committed to implementing sustainability principles. This suggests that public trust and reputation are more important than economic factors in driving sustainable business practices." Similar findings are reported by Meilantika et al. (2026), who state that "firm value was also shown to have a positive and significant effect on ESG disclosure, thus supporting the second hypothesis. This finding suggests that firms with high market value tend to maintain their reputation and investor trust through ESG disclosure." Furthermore, "the influence of firm value on ESG disclosure indicates that market pressure and corporate reputation are driving factors in increasing sustainability transparency." Based on these findings, the following hypothesis is formulated:

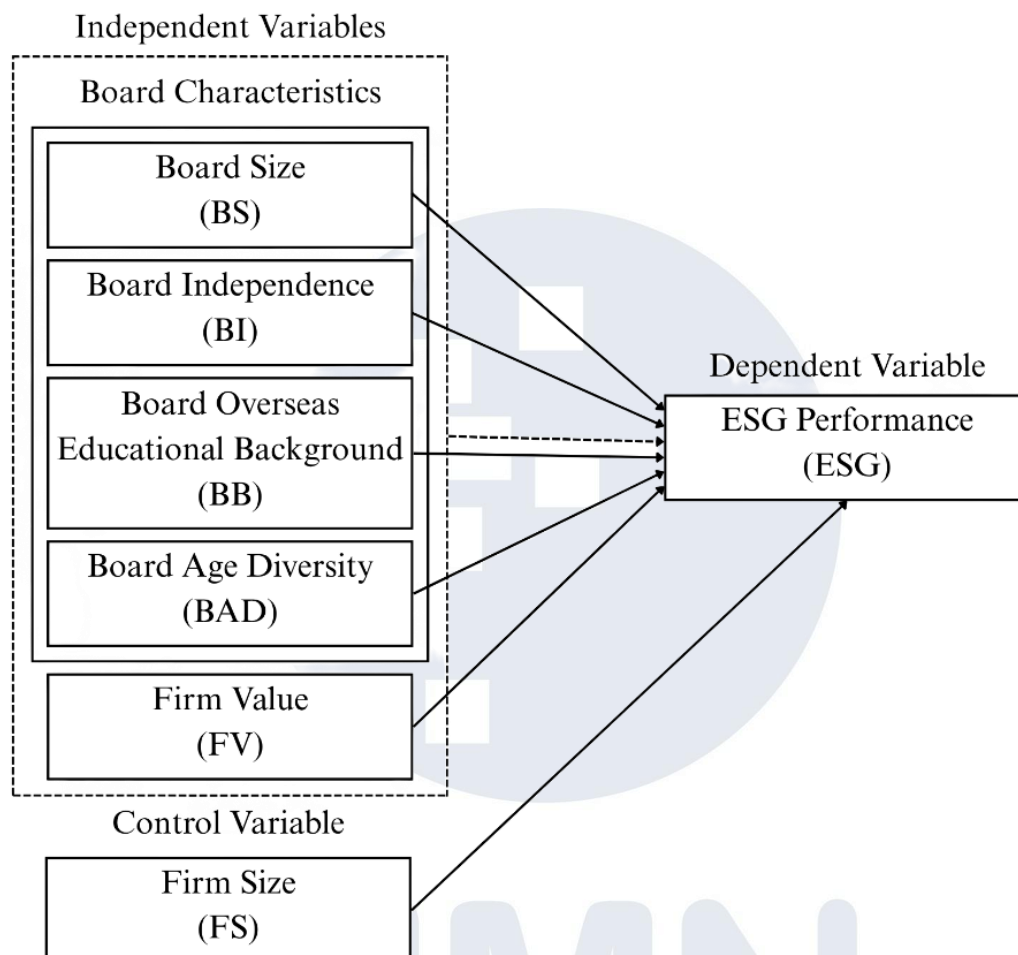
H_{a5}: Firm value, proxied by Tobin's Q, exerts a positive impact on ESG performance

2.1.8 Impact of Board Size, Board Independence, Board Age Diversity, Board Overseas Educational Background and Firm Value on ESG Performance

Several studies have examined ESG performance using multiple independent variables simultaneously. Ding et al. (2024) “investigates how board characteristics, such as independence, independent directors’ overseas experience, board size, and gender diversity, affect environmental, social, and governance (ESG) performance” and the study “reveals that the combined influence of board characteristics positively impacts ESG outcomes.” Similarly, in their research exploring “the effect of board diversity on environmental, social, and governance (ESG) performance in Korean-listed firms,” with the independent variables “board size, female directors on boards, age diversity, foreign directors, educational diversity, and foreign education,” Jeyhunov et al. (2025) state that their “findings reveal that an increased board size significantly correlates with higher ESG scores when combined with other board diversity dimensions.” Likewise, Kholillulloh et al. (2025) found that “the analysis results show that corporate governance and Return on Assets (ROA) simultaneously have a significant impact on ESG performance.” Regarding firm value, Chams et al. (2021) examined ESG performance using “financial performance (FIN), measured by free cash flow (FCF), future market performance (Tobin’s Q), and total quality management (TQM)” and found that “all four estimations are statistically significant at $p\text{-value} < 0.01$.”

2.2 Conceptual Framework

The conceptual framework can be illustrated as follows:



Picture 2.2 Research Framework