



ADVANCED INTERNATIONAL JOURNAL  
OF BUSINESS, ENTREPRENEURSHIP  
AND SMES  
(AIJBES)

[www.gaexcellence.com/aijbbs](http://www.gaexcellence.com/aijbbs)



## DOES ESG DRIVE ROA AND ROI RECOVERY IN DISTRESSED MALAYSIAN COMPANIES?

Asna Syakirah Sahabuddin<sup>1\*</sup>, Norliza Che-Yahya<sup>2</sup>

<sup>1</sup>Faculty of Business and Management, Universiti Teknologi Mara (UiTM), Malaysia

 [asna.syakirah@gmail.com](mailto:asna.syakirah@gmail.com)

 <https://orcid.org/0009-0005-4482-7039>

<sup>2</sup> Faculty of Business and Management, Universiti Teknologi Mara (UiTM), Malaysia

 [norliza9911@uitm.edu.my](mailto:norliza9911@uitm.edu.my)

 <https://orcid.org/0000-0002-9794-2007>

\*Corresponding Author

### Article Info:

#### Article history:

Received date: 21.01.2026

Revised date: 11.02.2026

Accepted date: 18.03.2026

Published date: 31.03.2026

#### To cite this document:

Sahabudin, A. S., & Che -Yahya, N. (2026). Does ESG Drive Roa and Roi Recovery in Distressed Malaysian Companies? *Advanced International Journal of Business Entrepreneurship and SMEs*, 8 (27), 547-562.

### Abstract:

Corporate financial performance (CFP) generally measures how a firm is effectively undertaking its profit-making activities, and the rising demands on companies by their stakeholders have resulted in a renewed emphasis on whether environmental, social, and governance (ESG) practices can be implemented to support financial performance, particularly in challenging environments. Firms that fall under the Practice Note 17 (PN17) and Guidance Note 3 (GN3) frameworks of Bursa Malaysia (BM) are under an increased level of scrutiny and pressure to recover, and thus, ESG–CFP relations are particularly applicable in the context of distress. This analysis was based on a sample of annual panels of PN17 and GN3 companies between 2015 and 2024, PN17/GN3 identification since 2001, and the datasets used in the research included BM, London Stock Exchange Group (LSEG) Workspace, annual reports, as well as websites of companies, with manual extraction of ESG data in the case of non-availability of third-party data. CFP was calculated by means of Return on Assets (ROA) and Return on Investment (ROI), while ESG was calculated by means of ESG scores and a composite ESG score, with control variables being company size, age, revenue growth, debt, shareholding by insiders, and board size. The empirical approach used fixed effects, pooled ordinary least squares, and random effects models as a product of diagnostic checks on the principles of normality, multicollinearity, heteroskedasticity, autocorrelation, and stationarity. The anticipated findings indicate that ESG practices have a positive relationship with CFP in distressed companies, and governance is expected to have the most proximate connection with performance through accountability and investor confidence. Meanwhile, the impact of environmental and social influences may be less apparent in the short term. In a nutshell, the results are targeted toward informing regulators, investors, and

distressed companies on ESG representations and highlighting ESG aspects as recovery mechanisms.

**DOI:**10.35631/AJBES.827035 **Keyword:**

Distressed Companies, ESG, Financial Performance, GN3, PN17, ROA, ROI



© The authors (2026). This is an Open Access article distributed under the terms of the Creative Commons Attribution (CC BY NC) (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact [aijb@gaexcellence.com](mailto:aijb@gaexcellence.com).

## Introduction

Corporate financial performance (CFP) is a key signal through which investors, analysts, and other stakeholders assess how efficiently a corporation deploys its resources to create profits and maintain the existing level of growth. When determining the measure of a performance, the process considers different dimensions into an aggregate outcome, which can be used to compare with other companies over time and against industry averages (Bendig 2023; Busch et al., 2022; Deb et al., 2023; Santhi et al., 2023). In practice, CFP is presented through a variety of benefits, including profitability, liquidity and solvency measures, which are often evaluated by scores, such as Return on Assets (ROA) and Return on Investment (ROI), Tobin's Q and Return on Equity (ROE) (Damodaran, 2024; Siegel et al., 2014; Fauzi 2009; García-Piña & Hernandez, 2024; Uimonen, 2022).

### *Defining Practice Note 17 (PN17) And Guidance Note 3 (GN3) In the Malaysian Context*

This study targets financially troubled listed companies in Malaysia, which are categorized under Bursa Malaysia's (BM) PN17 and GN3 framework. The term PN17 refers to the companies listed on the Main Market that are financially distressed. In comparison, the term GN3 refers to the companies that are considered to be in the same situation but are listed on the ACE Market. Generally, these designations indicate a serious risk to the financial condition of the company, as well as stringent regulatory oversight or greater market scrutiny. As a result, investors are likely to perceive PN17 and GN3 labels as a risk signal that elevates caution toward their investment value and recovery potential (Hashim, 2021).

### ***Why ESG Becomes High Stakes Under Financial Distress***

With the ever-increasing awareness of the impact that business practices have on the environment and social welfare, there is a rising awareness that the commitments of a company to Environmental, Social, and Governance (ESG) practices have an influence on business financial performance. Such influence is not just the establishment of a positive image or value creation in its own right (Barauskaite and Streimikiene, 2021; Fridson and Alvarez, 2022) but also the operational choices of managers on a day-to-day basis (Wu et al., 2020). The problem is particularly acute in troubled environments, where the generation of PN17 and GN3 status results in the formation of huge operational problems, the creation of an extremely unstable financial situation in a company, intensified reputational pressure, and an inability to access new funds. Simultaneously, stakeholders are demanding that companies be more transparent and have plausible recovery strategies to reduce the issues (Bakar and Noordin, 2021; Zainol and Salleh, 2021; Shahimi et al., 2021). This poses a problem that is prevalent in the larger market, given the magnitude of corporate distress. Sectoral analysis shows that there were 362 companies under the category of GN3 and PN17 in the years 2001–2024, making up 46.8% of the total listed enterprises. This indicates high risks that might destroy investor confidence and consequently bring about a setback in the growth and national development of the industry (Kalash, 2023; Shafai & Abd-Mutalib, 2024). The reason for studying ESG in distressed companies is not only to find evidence that can confirm a strong positive relationship between the two, but the important thing is to find out which pillars matter most when a company is in distress and to what extent ESG effectiveness for short- to medium-term performance is hindered by structural problems or measurement issues. This is why it is helpful to examine ESG as a single element within itself (ESG) and also as a total ESG score, since aggregated results may hide differences among pillars.

### ***The Practical Dilemma and the Research Gap***

In line with such pressure, ESG practices have gradually gained acceptance based on the belief that addressing ESG concerns may serve to promote CFP from various business perspectives (e.g., reputation, risk management, operational efficiency, and investor relations) (Bilyay-Erdogan et al., 2023). However, adoption is not uniform across sectors, and the need to appreciate the role of ESG in distressed companies is accentuated by findings that show that a significant number of PN17 and GN3 companies are from non-financial sectors where ESG capacity and implementation may be behind (Fintech News Malaysia, 2021). This creates a practical dilemma. On one hand, if ESG is a support for recovery, it may be an important lever for distressed companies and regulators. On the other hand, if it does not, or if impacts vary by ESG pillar, then companies and policymakers need better guidance on what ESG can actually provide in terms of deliverable benefits in distress.

The ambiguity of the ESG–CFP nexus is well evidenced. Previous studies document positive relationships between superior ESG practices and better CFP (Eccles et al., 2014; Clark et al., 2015; Friede et al., 2015). Nonetheless, other results are ambiguous or mixed as a result of different industries, regions, and criteria for ESG practices (Abdi et al., 2022). There are also methodological and reporting concerns that may have further confounded the relationship, particularly inconsistent ESG disclosure or variations in data quality that would interfere with causal observations (Ji, 2024). In short, there is no clear evidence of the association between ESG adoption and better CFP of PN17 and GN3 companies in Malaysia, despite policy efforts from the corporate governance code (Malaysian Code on Corporate Governance) and the

global initiative (SDGs). Therefore, the ability of ESG practices to protect investor value requires further research establishment (Saini et al., 2022).

### ***Research Approach Overview***

This study aims to investigate the association of ESG practices with CFP in PN17 and GN3 companies, after controlling for the company characteristics that may affect performance (i.e., company size, age of company, revenue growth rate, debt, insider shareholdings, and board size). Accordingly, panel data were employed to account for within and across-company variation. Our empirical approach employed static panel data models (pooled OLS, fixed effects, and random effects), complemented with model selection tests like the Hausman and the redundant fixed-effect likelihood ratio tests.

In addition, robustness is increased by the diagnostic tests for normality, multicollinearity, heteroskedasticity, and autocorrelation (Durbin–Watson) as well as the unit root testing, Levin, Lin & Chu (LLC), Im, Pesaran & Shin (IPS), Augmented-Dickey Fuller (ADF), and Phillips-Perron (PP) test. The data was retrieved from BM and the London Stock Exchange Group (LSEG) Workspace. As a result, ESG was enhanced by means of structured manual extraction through annual reports and sustainability statements (with the option existing for LSEG to be supplemented where applicable), with verification processes set up to improve coverage and ensure scoring integrity.

### ***Theoretical Foundation and Scope Justification***

This study is based on Stakeholder Theory and Legitimacy Theory, as these theories closely reflect PN17 and GN3 companies in terms of scope and nature.

- Stakeholder Theory relates to the research because troubled businesses are more pressured by their shareholders, creditors, employees, and society. Such ESG action and disclosure may be seen as ways to maintain or manage stakeholder relations, minimize perceived risk, and restore trust, which is logically linked to CFP results (Becchetti et al., 2022; Ratajczak, 2021).
- Legitimacy Theory is particularly pertinent as PN17 and GN3 status subjects the companies to public exposure and market scrutiny. In this context, ESG disclosure can serve as a legitimacy-repair mechanism by communicating fulfilment of societal and regulatory demands, enhancing trust, access to capital, and reputational rejuvenation (Díez-Martín et al., 2021; Martens & Bui, 2023; Panagopoulos & Tzionas, 2023).

Both of these theories further provide a clear and directed conceptual foundation for the importance of ESG in financially distressed environments, without going beyond the scope of this study.

### **Data**

#### ***Source and Context***

This study was concerned with Malaysian listed companies designated under BM's PN17 and GN3 listings. It also utilized the information available on public announcements of PN17 and

GN3 status classification through the BM website. The data collection process took place in the post-2015 environment, where BM's Sustainability Reporting Framework (SRF) has made ESG reporting mandatory for listed companies. This event has encouraged a uniform disclosure landscape with respect to ESG measurement.

The current paper relied on standard documentary and reporting sources that are generally used to interpret companies' disclosures and ESG practices in Malaysia. The relevant information was derived from BM's corporate announcements and disclosure records (such as restructuring, mergers, and delisting), third-party databases aggregating ESG indicators, some company fundamentals (e.g., LSEG Workspace), and company-level reporting, including annual reports, sustainability statements, or information available on companies' websites. In cases of incomplete third-party ESG coverage, the data were accessed from the annual reports and sustainability statements that are publicly available on BM or company websites. After acquiring the data, they were reviewed and organized using structured ESG elements.

### ***Measurement of Key Constructs***

The financial effectiveness of CFP was considered in terms of ROA or ROI. ROA indicates the efficiency with which a company's assets generate income (Rashid, 2021), and ROI measures returns to investments in comparison to the costs of those investments (Thusini et al., 2022). These indicators were highlighted as they have implications for the operational efficiency, resource end use, and investment outcomes, which are central in recovery-focused environments (Dormady et al., 2022; Al-Busaidi & Al-Muharrami, 2021; Saadaoui & Ben Salah, 2023). ESG practices were modelled as ESG scores and an aggregate ESG score. The pillar scores represent how much reporting has been captured under each ESG element as a proportion of total ESG element reporting, and the composite ESG score was an aggregation of the E, S, and G elements.

Company size was captured as the natural logarithm of shareholders' equity, accounting for corporate size, an established practice in finance chosen for comparability (Dang et al., 2018; Restrepo et al., 2018; Mkhaiber & Werner, 2021) and seconded by findings that support the use of equity-based measures of size (Nissim, 2013). The age of the company is the number of years since its establishment, calculated from the year of foundation to the focal year (Sandvik et al., 2022; Reim et al., 2022; Appolloni et al., 2022; Tarighi et al., 2022). Revenue growth rate is the first difference of the natural logarithm of revenue, which approximates percent change and reduces scale variation across companies (Wooldridge, 2016), in line with related empirical definitions (Cortés et al., 2021; Jiao, 2023; Kim & Sohn, 2013). In this study, the debt-to-asset ratio was used to measure debt since it directly connects the variable with a company's assets and is commonly used in solvency analysis (Farah et al., 2021; Budsaratagoon & Jitmaneroi, 2021; Rachman et al., 2023; Sari et al., 2022; Sukma et al., 2022). Meanwhile, the variable for insider shareholdings is defined as the fraction of shares owned by insiders, such as top management and board members (in percentage) over total shares issued (Ho et al., 2024; Haque et al., 2024; Bourveau et al., 2024), where a logarithmic transformation was applied due to skewness in some instances (Cicero & Wintoki, 2016). Finally, the size of the board is defined as total directorship, which is calculated as the sum of male and female directors.

## Research Method

### *Analytical Approach*

The theoretical foundations of this conceptual paper were founded on well-established quantitative frameworks that have been used to investigate ESG–CFP relations in a panel context across multiple settings. Static panel data techniques were selected according to the ones used in previous empirical work (e.g., pooled ordinary least squares (OLS), fixed effects, and random effects models; often, model choice is determined by the redundant fixed-effect likelihood ratio test and the Hausman test). Using this well-established methodological tradition but expanding on it, the ESG–CFP relationship was modeled using ROA and ROI as CFP measures, company characteristics (Ross et al., 2008) (size of company, age of company, rate of sales, debt to assets, insider shareholding, board size) as the typical set of controls, and ESG components separately or ESG as a composite (Chatterji et al., 2009; ASU, 2019). Related panel-based ESG research often uses econometric software such as EViews for statistical estimation.

### *Measurement Reliability and Diagnostic Consideration*

Both standard diagnostic considerations typically discussed in panel-based ESG–CFP research methodologies as a means of support for robustness and interpretability were also recognized in this methodological basis. Most typical methods of assessing normality include the use of skewness, kurtosis, and Jarque–Bera style testing (Bai & Ng, 2005; Kim, 2015; Mardia, 1970). Pearson correlation, as mentioned in Kay (2018), and variance inflation factors, are standards to assess multicollinearity, with often cited cut-offs being correlations greater than 0.90 (Belsley, 1991) and centred VIFs of 5 or 10 (Kim, 2019; Miles, 2005; Salmeron et al., 2020). Heteroskedasticity is commonly evaluated with tests like the Modified Wald test in fixed-effects settings, which has been documented as less computationally intensive but more appropriate with relatively small sample sizes (Murteira et al., 2013; Seo, 2010). The autocorrelation is typically assessed through the Durbin–Watson *d* test (with an express caveat that performance can be poor with small samples, White, 1992). When this metric is measured to be strong, previous studies often employ procedures like robust standard errors (Xu et al., 2023) and/or autoregressive terms (Alsharif et al., 2022). Panel unit root tests (LLC, IPS, ADF, and PP) were also used to confirm stationarity, consistent with existing literature for homogeneous and heterogeneous panels. Moreover, the approach is robust to serial correlation and heteroskedasticity (Lee et al., 2021; Ampofo et al., 2021; Chen et al., 2024; Vasilopoulos et al., 2022; Chang et al., 2022).

## Result And Discussion

Since there is a huge number of listed companies that may potentially slip into financial distress, a clear understanding of what enables distressed companies to remain and recover is important for investors, regulators, employees, and the economy. In Malaysia, PN17 (Main Market) and GN3 (ACE Market) are institutionalized signals to indicate distress, and their status characterizes the typically deteriorating financial states where companies are placed under greater scrutiny, hampered operationally, and face delisting if the implemented recovery plans fail (Shahimi et al., 2021; Bakar & Noordin, 2021). Simultaneously, ESG expectations have become more enhanced, as stakeholders strive to evaluate if a company's ESG practices

convey resiliency, credibility, and improved long-term prospects (Alsayegh et al., 2020; Li et al., 2021).

Simply put, the stated issues have been constantly debated in the scientific community, and the unanswered questions remain a topic of significant interest. One of the most crucial lines of evidence contends that performance on ESG is positively related to financial performance via risk mitigation, operational effectiveness, and other channels (Alkaraan et al., 2022; Chen et al., 2023; Qureshi et al., 2021; Huang, 2019). However, another systematic review shows that the ESG advantage is not uniform, varying by industry level, region, measure, and the problems of establishing causation (Abdi et al., 2022; Ji, 2024). This ambiguity is further underscored in distressed settings, where the need for controlled cash flow, the stakes to prioritize the short-term, and recurrent governance issues can influence the ESG-to-performance link and speed of translation for distressed companies.

In other words, it does not matter if the evidence is strongly positive, weak, or mixed; the issue remains important. This reasoning reinforces the notion that ESG is not just a compliance or reporting exercise but rather a real recovery lever, specifically in economically meaningful terms, even in the most distressed contexts. Nevertheless, limited, uneven effects, or effects that only show for a few pillars, are still significant because they signal to policymakers and companies how ESG should be resourced as well as which ESG dimensions are most useful for companies undertaking turnaround efforts.

The reason is clear on a theoretical basis. The theory of Stakeholder implies that maintaining good relations with different party groups, including investors, creditors, employees, customers, and communities, could result in reduced risk and improvement of reputation, which could lead to better results in the financial performance of a company (Dmytriiev et al., 2021; Becchetti et al., 2022; Ratajczak, 2021). According to Legitimacy Theory, ESG disclosures and practices attract companies to comply with the expectations of society and the regulations themselves, ensuring access to capital and overcoming possible legal or reputational risks (Panagopoulos and Tzionas, 2023; Chen et al., 2023).

The paper considers ESG pillars as different mechanisms that might affect the CFP of distressed PN17 and GN3 companies. Good environmental practices can be used to help with compliance, cost, and performance (Raja-Adzrin et al., 2021; Pinheiro et al., 2023). Additionally, social programs, such as community involvement, equitable labor relations, and diversity in the workforce, can lead to increased reputation, appeal to investors, and workforce outcomes (Nirino et al., 2021; Pinheiro et al., 2023; Shalbayeva et al., 2023). Compared to others, governance practices are especially vital in the context of distressed environments, where accountability, transparency, ethical behavior, and overseers are closely associated with credibility, quality of decision-making, and trust in stakeholders (Doni et al., 2019; Ismail et al., 2019; Saygili et al., 2021). The notion is also applicable to a composite ESG measure since integrated ESG strategies are capable of delivering total benefits as a whole in that they have an impact not only on reputation, efficiency, and confidence of stakeholders, but also have secondary impacts, which are important in comparison to individual pillars (Aybars et al., 2019; Zhou et al., 2022). At the same time, the relevance and timing of these mechanisms can differ across ESG pillars in distressed settings, given differences in implementation costs, time horizons, and organisational capacity.

In empirical research that examines ESG–CFP relationships in panel settings, credibility is commonly supported by a set of diagnostic and model-choice considerations. Multicollinearity is commonly assessed using correlation and VIF-based rules of thumb, where very high correlations (around 0.9) or high centred VIF values (commonly above 5 or 10) can signal instability in coefficient interpretation (Kim, 2019; Miles, 2005; Salmeron et al., 2020). Heteroskedasticity is often examined using approaches such as the Modified Wald test commonly applied in fixed-effects settings (Murteira et al., 2013; Seo, 2010), with robust standard errors used where appropriate. Autocorrelation is commonly checked using Durbin–Watson logic, with corrections applied where needed, including robust errors or autoregressive terms (White, 1992; Xu et al., 2023; Alsharef et al., 2022). The most common types of panel unit root tests include LLC, IPS, ADF, and PP methods, which are used to test stationarity because of the possibility of spurious relationships when variables are non-stationary (Lee et al., 2021; Ampofo et al., 2021; Chen et al., 2024; Vasilopoulos et al., 2022; Chang et al., 2022). The correlation between ESG and financial performance may differ in different market segments and states of companies. The practices of PN17 and GN3 firms have varied listing rules, and they might not be the same in terms of the length of distress they are in, as well as the pace at which they are being restructured. These aspects determine the prioritization of ESG, preparation of disclosures, and the response of stakeholders to the ESG indicators during turnaround initiatives.

## Conclusion

The reason behind undertaking this research is that financially distressed listed companies will have more implications on investors, market confidence, and the overall stability of the Malaysian capital market. According to the listing conditions in BM, companies under PN17 and GN3 would be considered distressed companies or non-compliant companies. Such classification is a clear indication to market participants that the company is in a dire state of trouble or is not meeting the disclosure requirements. The more its effects take root in everyday operations, the more it can creep into day-to-day activities, posing reputational and monetary dangers (e.g., less investor confidence and laying even more terrible conditions to raise capital). These severe outcomes are the urgent signs that the listed company needs a recovery plan to recover and appear credible. Previously, Malaysia has intensified the level of governance and disclosure expectations with regard to ESG. As an illustration, in 2015, BM launched a Framework on Sustainability Reporting that places pressure on listed businesses with a market capitalization of a significant amount to report on sustainability practices, dangers, and effects. Such a regulatory condition adds to research on ESG practice under unpleasant conditions, such as the degree to which ESG is working outside reporting obligations.

This research paper is structured in a transparent and replicable manner, methodologically. It used panel data, making it possible to observe both inter-company differences (cross-sectional) and temporal changes (differences in time) with yearly data through 10 years. The included data comprised companies classified as PN17 and GN3 from 2001 to 2024, derived from announcements and status classification released by BM (the sample period is bounded by the analysis period after 2015 to coincide with mandatory reporting on ESG) [7]. The primary sources of data were BM and LSEG Workspace, supplemented by company annual reports and the company website. For the few years where the ESG data is not directly available via LSEG, the author extracted the ESG disclosures from annual reports and sustainability statements, applying a data quality check and verification process to protect scoring integrity and maximize coverage. The empirical strategy relied on static panel modelling, such as pooled

OLS, fixed effects, and random effects, with the selection of the model dictated by the redundant fixed-effect likelihood ratio test and the Hausman test.

Additionally, a unique structure for investigating ESG–CFP links between financially troubled PN17 and GN3 companies was provided, as opposed to using samples that are dominated by financially healthy companies. This study was structured around five objectives and questions, which included the effects of the relationship between ESG components and CFP. It also investigated the combined ESG relationship with performance and determined how company characteristics relate to performance in a similar context. Also, this study focused on analyzing each ESG element individually before examining the integrated ESG measure, following the premise in the literature that the outputs do not generate conclusive results in the global context. The design facilitates comparisons, which helps a more context-sensitive evaluation of ESG and performance within distress conditions by distinguishing between PN17 and GN3 companies and recovered and still-distressed status.

The collected information and analysis offer theoretical logic as to (1) why ESG practices are salient under distressed conditions and (2) why ESG components might not function alike. Thus, Stakeholder Theory was able to explain why ESG practices are framed around regaining trust to retain essential stakeholders like investors, creditors, and regulators. In addition, the Legitimacy Theory was able to explain how ESG disclosures can act as signals for setting the variables to be in line with society and regulatory standards to re-attain legitimacy and lower the delisting risk. These perspectives reinforce the idea that ESG can behave as a mechanism of smart capital when it is not treated merely as a compliance mechanism for repairing reputation, attracting investment, and bolstering longer-term performance. Furthermore, this study identified discrepancies found in previous literature, where the results obtained tend to be inconsistent. This specific limitation allows the current research to be narrowed down to distressed Malaysian listed companies.

The implications are directly derived from the problem-setting and the structure of the research. First and foremost, this study offers regulators and policymakers a foundation to evaluate the relationship between the ESG disclosure push in Malaysia, including the requirement for listed companies to disclose ESG-related information since 2015, and the needs of distressed listed companies. Second, this study provides support for investors and market participants to interpret cleaner ESG disclosures, given that the distress status of PN17 and GN3 companies already signals higher risk, and clearer disclosures and recovery plans are anticipated by the market. Finally, the presented framework also seeks to position ESG commitments and disclosures as important elements of wider efforts aimed at rebuilding performance and credibility in the case of the PN17 and GN3 companies.

To improve on these various aspects, future research might consider expanding the observation period beyond the first ten years of obligatory ESG disclosure, using other outcome measures besides ROA and ROI, and utilizing different modelling specifications to ascertain whether the ESG-performance relationships identified in this paper vary with a longer time horizon and/or the types of distress and restructuring path taken.

- 
- Acknowledgements:** The authors would like to express their sincere gratitude to Faculty of Business and Management (FBM), UiTM Puncak Alam for providing the necessary resources and support throughout the course of this research. Special appreciation is extended to supervisors, colleagues and peers who contributed valuable insights and constructive feedback, which greatly enhanced the quality of this article.
- Funding Statement:** This research received financial support provided through the Dana Dalam Fakulti (DDF), Faculty of Business and Management (FBM), UiTM, Puncak Alam grant (Grant file no.: 600-TNCPI 5/3/DDF (FPP) (024/2024)). which granted the publication of this article.
- Conflict of Interest Statement:** The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the Advanced International Journal of Business, Entrepreneurship and SMEs (AIJBES).
- Ethics Statement:** This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.
- Author Contribution Statement:** All authors contributed significantly to the development of this manuscript. Asna Syakirah Sahabuddin was responsible for the conceptualization, methodology, and overall supervision of the study. Asna Syakirah Sahabuddin and Norliza Che-Yahya contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.
-

## References

- Abdi, Y., Li, X., & Càmara-Turull, X. (2022). Exploring the impact of sustainability (ESG) disclosure on firm value and financial performance (FP) in airline industry: The moderating role of size and age. *Environment, Development and Sustainability*, 24(4), 5052–5079. <https://doi.org/10.1007/s10668-021-01649-w>
- Ahmad, R. A. R., Ayob, A. A., Zainon, S., & Probohudono, A. N. (2021). The influence of environmental, social and governance reporting on firm value: Malaysian evidence. *International Journal of Academic Research in Business and Social Sciences*, 11(9), 1058-1080. <http://dx.doi.org/10.6007/IJARBSS/v11-i9/10877>
- Al-Busaidi, K. A., & Al-Muharrami, S. (2021). Beyond profitability: ICT investments and financial institutions performance measures in developing economies. *Journal of Enterprise Information Management*, 34(3), 900-921.
- Alkaraan, F., Albitar, K., Hussainey, K., & Venkatesh, V. G. (2022). Corporate transformation toward Industry 4.0 and financial performance: The influence of environmental, social, and governance (ESG). *Technological Forecasting and Social Change*, 175, 121423. <https://doi.org/10.1016/j.techfore.2021.121423>
- Alsayegh, M. F., Abdul Rahman, R., & Homayoun, S. (2020). Corporate economic, environmental, and social sustainability performance transformation through ESG disclosure. *Sustainability*. <https://doi.org/10.3390/su12093910>
- Alsharef, A., Aggarwal, K., Sonia, Kumar, M., & Mishra, A. (2022). Review of ML and AutoML solutions to forecast time-series data. *Archives of Computational Methods in Engineering*, 29(7), 5297-5311.
- Ampofo, G. M. K., Jinhua, C., Bosah, P. C., Ayimadu, E. T., & Senadzo, P. (2021). Nexus between total natural resource rents and public debt in resource-rich countries: A panel data analysis. *Resources Policy*, 74, 102276.
- Appolloni, A., Jabbour, C. J. C., D'Adamo, I., Gastaldi, M., & Settembre-Blundo, D. (2022). Green recovery in the mature manufacturing industry: The role of the green-circular premium and sustainability certification in innovative efforts. *Ecological Economics*, 193, 107311.
- Aybars, A., Ataünal, L., & Gurbuz, A. (2019). ESG and Financial Performance. *Advances in Business Strategy and Competitive Advantage*. <https://doi.org/10.4018/978-1-5225-7180-3.CH029>.
- Bai, J., & Ng, S. (2005). Tests for Skewness, Kurtosis, and Normality for Time Series Data. *Journal of Business & Economic Statistics*, 23, 49 - 60. <https://doi.org/10.1198/073500104000000271>.
- Bakar, S., & Noordin, B. A. A. (2021). The dynamic impacts of financial determinants and ownership concentration toward firm survival in Malaysia. In *Recent Developments in Asian Economics International Symposia in Economic Theory and Econometrics* (pp. 397-421). Emerald Publishing Limited. <https://doi.org/10.1108/S1571-038620210000028023>
- Barauskaite, G., & Streimikiene, D. (2021). Corporate social responsibility and financial performance of companies: The puzzle of concepts, definitions and assessment methods. *Corporate Social Responsibility and Environmental Management*, 28(1), 278-287. <https://doi.org/10.1002/csr.2048>
- Becchetti, L., Bobbio, E., Prizia, F., & Semplici, L. (2022). Going deeper into the S of ESG: a relational approach to the definition of social responsibility. *Sustainability*. <https://doi.org/10.3390/su14159668>

- Bendig, D., Wagner, A., & Lau, K. (2023). Does it pay to be science-based green? The impact of science-based emission-reduction targets on corporate financial performance. *Journal of Industrial Ecology*.
- Bilyay-Erdogan, S., Danisman, G. O., & Demir, E. (2023). ESG performance and dividend payout: A channel analysis. *Finance Research Letters*, 55, 103827. <https://doi.org/10.1016/j.frl.2023.103827>
- Bourveau, T., Brochet, F., Ferri, F., & Sun, C. (2024). Say on pay laws and insider trading. *The Accounting Review*, 99(4), 83–110. <https://doi.org/10.2308/TAR-2021-0596>
- Budsaratragoon, P. & Jitmaneeoj, B. (2021). Corporate sustainability and stock value in Asian–Pacific emerging markets: synergies or tradeoffs among ESG factors?. *Sustainability*. <https://doi.org/10.3390/su13116458>
- Busch, T., Bassen, A., Lewandowski, S., & Sump, F. (2022). Corporate Carbon and Financial Performance Revisited. *Organization & Environment*, 35(1), 154–171. <https://doi.org/10.1177/1086026620935638>
- Chang, F., Huang, H., Chan, A. H., Man, S. S., Gong, Y., & Zhou, H. (2022). Capturing long-memory properties in road fatality rate series by an autoregressive fractionally integrated moving average model with generalized autoregressive conditional heteroscedasticity: A case study of Florida, the United States, 1975–2018. *Journal of safety research*, 81, 216-224.
- Chen, L., Gozgor, G., Lau, C. K. M., Mahalik, M. K., Rather, K. N., & Soliman, A. M. (2024). The impact of geopolitical risk on CO2 emissions inequality: Evidence from 38 developed and developing economies. *Journal of Environmental Management*, 349, 119345.
- Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*. <https://doi.org/10.1016/j.jenvman.2023.118829>
- Cicero, D., & Wintoki, M. B. (2016). Insider trading patterns.
- Clark, G. L., Feiner, A., & Viehs, M. (2015). From the stockholder to the stakeholder: How sustainability can drive financial outperformance. University of Oxford and Arabesque Partners.
- Cortés, L. M., Marín, A., & Benavides, J. (2021). Firm size and economic concentration: An analysis from a developing economy. *PLOS ONE*, 16(7), e0254196. <https://doi.org/10.1371/journal.pone.0254196>
- Damodaran, A. (2024). *The little book of valuation: How to value a company, pick a stock, and profit*.
- Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, 159–176. <https://doi.org/10.1016/j.jbankfin.2017.09.006>
- Deb, D., De, A., & Gillet, P. (2023). Examining the association between corporate social responsibility and corporate financial performance: a scientometric analysis. *International Journal of Economics and Business Research*, 26(4), 594-626. <https://doi.org/10.1504/IJEER.2023.134860>
- Díez-Martín, F., Blanco-González, A., & Díez-de-Castro, E. (2021). Measuring a scientifically multifaceted concept. The jungle of organizational legitimacy. *European Research on Management and Business Economics*, 27(1), 100131. <https://doi.org/10.1016/j.iemeen.2020.10.001>
- Dmytriiev, S. D., Freeman, R. E., & Hörisch, J. (2021). The relationship between stakeholder theory and corporate social responsibility: Differences, similarities, and implications

- for social issues in management. *Journal of Management Studies*, 58(6), 1441-1470. <https://doi.org/10.1111/joms.12684>
- Doni, F., Corvino, A., & Martini, S. (2019). King Codes on Corporate Governance and ESG Performance: Evidence from FTSE/JSE All-Share Index. *Integrated Reporting*. [https://doi.org/10.1007/978-3-030-01719-4\\_17](https://doi.org/10.1007/978-3-030-01719-4_17).
- Dormady, N. C., Rose, A., Roa-Henriquez, A., & Morin, C. B. (2022). The cost-effectiveness of economic resilience. *International Journal of Production Economics*, 244, 108371.
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835-2857. <https://doi.org/10.1287/mnsc.2014.1984>
- Farah, I., Amin, C., & Pramudianto, P. (2021). The Effect of Debt To Asset Ratio, Long Term Debt To Equity Ratio and Time Interest Earned Ratio on Profitability. *Bina Bangsa International Journal of Business and Management*, 1(1), 68-78.
- Fauzi, H. (2009). The Determinants of the Relationship of Corporate Social Performance and Financial Performance: Conceptual Framework. *Issues In Social And Environmental Accounting*, 2(2), 233. <https://doi.org/10.22164/isea.v2i2.34>
- Fintech News Malaysia. (2021). Here's how Malaysia is stepping up our ESG efforts. *Fintech*
- Fridson, M. S. & Alvarez, F. (2022). *Financial statement analysis: a practitioner's guide*.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. <https://doi.org/10.1080/20430795.2015.1118917>
- García-Piña Rosete, J. C., & Hernandez Barros, R. (2024). Sustainability accounting reporting: issues for the automobile industry. *Meditari Accountancy Research*.
- Guasmin, & Rajindra, R. (2024). Unleashing Synergies: Interplay between Human Resource Management, Strategic Marketing, and Corporate Financial Performance. *Atestasi: Jurnal Ilmiah Akuntansi*, 7(1), 87–124. <https://doi.org/10.57178/atestasi.v7i1.756>
- Haque, H., Kabir, M. N., Abedin, S., Miah, M. D., & Sharma, P. (2024). Insider ownership and default risk: What does the data reveal about Japanese firms? *China Accounting and Finance Review*, 26(3). <https://doi.org/10.1108/CAFR-06-2023-0059>
- Hashim, H. N. M. (2021). Why financially distressed companies PN17 of Bursa Malaysia regularisation plan are delayed?
- Ho, T. Q., Nguyen, Y., & Tran, H. (2024). The impact of insider ownership and institutional ownership on post-earnings-announcement-drift: Evidence from Vietnam. *Research in International Business and Finance*, 70, 102352. <https://doi.org/10.1016/j.ribaf.2024.102352>
- Huang, D. (2019). Environmental, social and governance (ESG) activity and firm performance: A review and consolidation. *Accounting & Finance*. <https://doi.org/10.1111/acfi.12569>
- Ismail, A., Adnan, Z., Fahmi, F., Darus, F., & Clark, C. (2019). Board Capabilities and the Mediating Roles of Absorptive Capacity on Environmental Social and Governance (ESG) Practices. *International Journal of Financial Research*. <https://doi.org/10.5430/IJFR.V10N3P11>.
- Jiao, L. (2023). Revenue growth in not-for-profit organisations: The effects of changes in funding sources and regulation. *Accounting & Finance*, 63(S1), 1497–1535. <https://doi.org/10.1111/acfi.12960>
- Kalash, I. (2023), "The financial leverage–financial performance relationship in the emerging market of Turkey: the role of financial distress risk and currency crisis", *EuroMed Journal of Business*, Vol. 18 No. 1, pp. 1-20. <https://doi.org/10.1108/EMJB-04-2021-0056>

- Kim, J. (2019). Multicollinearity and misleading statistical results. *Korean Journal of Anesthesiology*, 72, 558 - 569. <https://doi.org/10.4097/kja.19087>.
- Kim, J.-B., & Sohn, B.-C. (2013). Institutional ownership, product market competition, and earnings management: Some evidence from international data. *Journal of International Accounting Research*, 12(1), 23–57.
- Kim, N. (2015). Tests Based on Skewness and Kurtosis for Multivariate Normality. *Communications for Statistical Applications and Methods*, 22, 361-375. <https://doi.org/10.5351/CSAM.2015.22.4.361>.
- Lee, C. C., Ranjbar, O., & Lee, C. C. (2021). Testing the persistence of shocks on renewable energy consumption: evidence from a quantile unit-root test with smooth breaks. *Energy*.
- Li, T., Wang, K., Sueyoshi, T., & Wang, D. (2021). ESG: Research progress and future prospects. *Sustainability*, 13(21), 11663. <https://doi.org/10.3390/su132111663>
- Mardia, K. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57, 519-530. <https://doi.org/10.1093/BIOMET/57.3.519>.
- Martens, W. & Bui, C. N. M. (2023). An exploration of legitimacy theory in accounting literature. *Open Access Library Journal*. <https://doi.org/10.4236/oalib.1109713>
- Miles, J. (2005). Tolerance and Variance Inflation Factor. . <https://doi.org/10.1002/9781118445112.STAT06593>.
- Mkhaiber, A., & Werner, R. A. (2021). The relationship between bank size and the propensity to lend to small firms: New empirical evidence from a large sample. *Journal of International Money and Finance*, 110, 102281. <https://doi.org/10.1016/j.jimonfin.2020.102281>
- Murteira, J., Ramalho, E., & Ramalho, J. (2013). Heteroskedasticity testing through a comparison of Wald statistics. *Portuguese Economic Journal*, 12, 131-160. <https://doi.org/10.1007/S10258-013-0087-X>.
- Nirino, N., Santoro, G., Miglietta, N., & Quaglia, R. (2021). Corporate controversies and company's financial performance: Exploring the moderating role of ESG practices. *Technological Forecasting and Social Change*, 162, 120341. <https://doi.org/10.1016/j.techfore.2020.120341>.
- Nissim, D. (2013). Relative valuation of U.S. insurance companies. *Review of Accounting Studies*, 18(2), 324–359. <https://doi.org/10.1007/s11142-012-9213-8>
- Panagopoulos, A. G., & Tzionas, I. (2023). The Use of Sustainable Financial Instruments in Relation to the Social Impact Investment: ESG Policies, Capital Markets' Approach and Investors' Protection: An Innovative Perspective for a Global Surveillance Authority. *International Journal of Business Administration*, 14(1), 87. <https://doi.org/10.5430/ijba.v14n1p87>
- Pinheiro, A., Panza, G., Berhorst, N., Toaldo, A., & Segatto, A. (2023). Exploring the relationship among ESG, innovation, and economic and financial performance: evidence from the energy sector. *International Journal of Energy Sector Management*. <https://doi.org/10.1108/ijesm-02-2023-0008>.
- Qureshi, M. A., Akbar, M., Akbar, A., & Poulouva, P. (2021). Do ESG endeavors assist firms in achieving superior financial performance? A case of 100 best corporate citizens. *Sage Open*. <https://doi.org/10.1177/21582440211021598>
- Rachman, S., Karyatun, S., & Digdowiseiso, K. (2023). The Effect of Current Ratio, Debt to Equity Ratio, Debt to Asset Ratio, and Total Asset Turnover on The Financial Performance of Property and Real Estate Companies Listed in The Idx For The 20162020 Period. *Jurnal Syntax Admiration*, 4(2), 361-377.

- Rashid, C. A. (2021). The efficiency of financial ratios analysis to evaluate company's profitability. *Journal of Global Economics and Business*.
- Ratajczak, P. (2021). The mediating role of natural and social resources in the corporate social responsibility—corporate financial performance relationship. *Managerial and Decision Economics*. <https://doi.org/10.1002/mde.3216>
- Reim, W., Yli-Viitala, P., Arrasvuori, J., & Parida, V. (2022). Tackling business model challenges in SME internationalization through digitalization. *Journal of Innovation & Knowledge*, 7(3), 100199.
- Restrepo, F., Cardona-Sosa, L., & Strahan, P. E. (2018). Funding liquidity without banks: Evidence from a shock to the cost of very short-term debt.
- Saadaoui, A. and Ben Salah, O. "The moderating effect of financial stability on the CSR and bank performance." *EuroMed Journal of Business*, 2023.
- Saini, N., Antil, A., Gunasekaran, A., Malik, K., & Balakumar, S. (2022). Environment-social-governance disclosures nexus between financial performance: A sustainable value chain approach. *Resources, Conservation and Recycling*, 186, 106571. <https://doi.org/10.1016/j.resconrec.2022.106571>
- Salmeron, R., Garcia, C., & Garcia, J. (2020). Overcoming the inconsistencies of the variance inflation factor: a redefined VIF and a test to detect statistical troubling multicollinearity. *arXiv: Methodology*.
- Sandvik, H., Hetlevik, Ø., Blinkenberg, J., & Hunskaar, S. (2022). Continuity in general practice as predictor of mortality, acute hospitalisation, and use of out-of-hours care: a registry-based observational study in Norway. *British Journal of General Practice*, 72(715), e84-e90.
- Santhi, P., Sasirekha, P., & Anija, J. (2023). A Casual Linkage between Corporate Sustainability Performance and Financial Performance of Select IT & ITES Companies in India.
- Sari, D. P., Nabella, S. D., & Fadlilah, A. H. (2022). The effect of profitability, liquidity, leverage, and activity ratios on dividend policy in manufacturing companies in the food and beverage industry sector listed on the .... *Jurnal Mantik*.
- Saygili, E., Arslan, S., & Birkan, A. (2021). ESG practices and corporate financial performance: Evidence from Borsa Istanbul. *Borsa Istanbul Review*. <https://doi.org/10.1016/J.BIR.2021.07.001>.
- Seo, B.. (2010). Conditional heteroskedasticity-robust testing for cointegration. *Journal of Economic Theory and Econometrics*. 21. 20-46.
- Shafai, N. A. & Abd-Mutalib, H. (2024). Ownership structures and sustainability reporting of Malaysian listed companies. *Jurnal Pengurusan*. [ukm.my](http://ukm.my)
- Shahimi, W. R. M. A., Hanafi, A. H. A., & Mohamad, N. A. (2021). The Impact of COVID-19 on the Financial Performance of PN17 and GN3 Status Firms: Does It Add Salt Into The Wound. *Advanced International Journal of Banking, Accounting and Finance*, 3(7), 47-58. <http://dx.doi.org/10.35631/AIJBAF.37004>
- Shalbayeva, S., Ismailov, T., Mitkov, M., Zamlynska, O., Khachatryan, V., & Stratiichuk, V. (2023). ESG rating of capital's effect on firms' financing sources: a case study of Asian companies. *Access Journal - Access to Science, Business, Innovation in the digital economy*. [https://doi.org/10.46656/access.2024.5.1\(7\)](https://doi.org/10.46656/access.2024.5.1(7)).
- Siegel, J. J. (2014). *Stocks for the long run: The definitive guide to financial market returns & long-term investment strategies* (Fifth edition). McGraw-Hill Education.
- Sukma, R. P., Nurtina, A. R., & Nainggolan, B. M. (2022). Effect of Debt Ratio, Long-Term Debt To Equity, and Firm Size on Profitability. *Journal of Management and Leadership*, 5(1), 27-37.

- Tarighi, H., Appolloni, A., Shirzad, A., & Azad, A. (2022). Corporate social responsibility disclosure (CSRD) and financial distressed risk (FDR): does institutional ownership matter?. *Sustainability*. <https://doi.org/10.3390/su14020742>
- Thusini, S. T., Milenova, M., Nahabedian, N., Grey, B., Soukup, T., Chua, K. C., & Henderson, C. (2022). The development of the concept of return-on-investment from large-scale quality improvement programmes in healthcare: an integrative systematic literature review. *BMC health services research*, 22(1), 1492.
- Uimonen, K. (2022). Financial impacts of environmental management system in private companies: systematic literature review.
- Vasilopoulos, K., Pavlidis, E., & Martínez-García, E. (2022). exuber: Recursive right-tailed unit root testing with R. *Journal of Statistical Software*, 103, 1-26.
- White, K. (1992). The Durbin-Watson Test for Autocorrelation in Nonlinear Models. *The Review of Economics and Statistics*, 74, 370-373. <https://doi.org/10.2307/2109675>.
- Wooldridge, J. M. (2016). *Introductory econometrics: A modern approach* (6th ed.). Cengage.
- Wu, L., Shao, Z., Yang, C., Ding, T., & Zhang, W. (2020). The impact of CSR and financial distress on financial performance—evidence from Chinese listed companies of the manufacturing industry. *Sustainability*. <https://doi.org/10.3390/su12176799>
- Xin, J. J. (2024). ESG score and corporate financial performance in controversial industries.
- Xu, S., Zhang, Y., Chen, L., Leong, L. W., Muda, I., & Ali, A. (2023). How Fintech and effective governance derive the greener energy transition: Evidence from panel-corrected standard errors approach. *Energy Economics*.
- Zainol, Z., & Salleh, Z. (2021). Audit Committee Characteristics and Firm Performance: A Case of Top Performing, PN17 and GN3 Public Listed Companies. 13(4)
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*. <https://doi.org/10.1002/bse.3089>.