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Effect of Board and Firm Characteristics on Sustainability Reporting of Listed Multinational Firms in Nigeria

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ABSTRACT

This study examines the effect of board and firm characteristics on sustainability reporting among listed multinational firms in Nigeria. Board characteristics were measured by board gender diversity and board meetings, while firm characteristics were represented by leverage and market capitalization. Sustainability reporting, the dependent variable, was measured using the Global Reporting Initiative (GRI) checklist. Data were obtained from the annual reports and accounts of 15 listed multinational firms covering 2016–2025. The study employed the Random Effects Generalized Least Squares (GLS) model using Stata, with multicollinearity and heteroskedasticity tests conducted to ensure the robustness of the results. Findings reveal that board gender diversity has a positive and significant effect on sustainability reporting, while board meetings have an insignificant effect. Similarly, market capitalization has a positive and significant effect, whereas leverage has no significant effect. The study recommends that listed multinational firms in Nigeria maintain adequate female representation on their boards and strengthen their market capitalization to enhance sustainability reporting.

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INTRODUCTION

Due to increasing global awareness and acknowledgment of the impact that business organizations have on sustainability reporting, there is a growing demand for sustainability reporting. This includes understanding how multinational firms contribute to creating a sustainable future through their approach to crucial sustainability reporting issues, such as the treatment of suppliers, employees, and communities, waste, biodiversity hazards, air pollution and much more. Motivation for this study is of many folds.

Although sustainability reporting is voluntary in Nigeria, many firms are increasingly prioritizing it (Chamo 2020). The study delves into the sustainability reporting practices of the Nigerian multinational firms' industry, analyzing issues affecting it in annual reports. In comparison to other countries, sustainability reporting in Nigeria is underrepresented, emphasizing the need for a study tailored to Nigeria's unique sustainability reporting factors.

In addition, even though research on the effect of board and firm characteristics on sustainability reporting is not limited in the Nigerian context, with a predominant focus on environmental reporting. This is as reported by KPMG (2020), that the trend of sustainability reporting globally pictures Africa as the least with 3% and Europe and American having the highest with 45% and 28% respectfully. There is therefore a need in Africa, in this case Nigeria, to carry out a more of such similar studies, especially for the fact that the sustainability reporting factors in Nigeria may be different from other countries. This study hence addresses this gap in exploring sustainability reporting and its impact on the system within which Nigerian firms operate.

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Most importantly, aside the fact that most of the studies in this domain concentrate on the local companies with limited attention to the multinational firms; the findings in these studies appear controversial – having mixed findings/conclusions See: {Razaq et al (2023); Brogi and Lagasio (2025); Zhu et al (2024); and others). The study therefore aims to contribute to the body of knowledge in sustainability reporting, specifically focusing on listed multinational firms on the Nigerian Stock Exchange to empirically examine the impact of board and firm characteristics on sustainability reporting, while attempting to settle the arguments that remain unresolved. For this, the study seeks definite answer to the question regarding the extent to which board and firm characteristics affect sustainability reporting in Nigerian listed multinational firms.

In light of these developments, this research seeks to address the identified gaps by way of testing the following hypotheses:

H_{01} Board Gender Diversity has no significant effect on sustainability reporting of Listed Multinational Firms in Nigeria.

H_{02} Board Meetings has no significant effect on sustainability reporting of Listed Multinational Firms in Nigeria.

H_{03} Leverage has no significant effect on sustainability reporting of Listed Multinational Firms in Nigeria.

H_{04} Market Capitalization has no significant effect on sustainability reporting of Listed Multinational Firms in Nigeria.

Literature Review and Theoretical Framework

The stakeholder theory has been around since the 70's which was created over time by Freeman (2001) by bringing together company transparency and accountability to many different types of stakeholders. Abdulsalam and Babangida (2020) stated that stakeholder theory has its beginnings in economics, sociology, law, organisational areas and management. This theory is one of the most used criteria to environmental, social and economic researches. According to the stakeholder theory those running businesses i.e. the managers had a duty to not only the company but also to the society as a whole (Abdulsalam and Babangida 2020). Freeman (2001) opined that, the board of directors' activities and other employees can have an impact on both external and internal shareholders. This theory is one of the most used criteria to environmental, social and economic researches. The stakeholder theory holds sustainability reporting as an accountability mechanism.

Abdulsalam and Babangida (2020) made it known that the stakeholder theory has a part to play with the mutating and complicated relationship that firms have with the environment in which they operate, the company would need the ability to hand the varying needs of a diversified set of investors that are infinite in nature. Of which those individuals and groups whom have part or full ownership of the firm are called stakeholders. In other words, clusters of people or a single person that may be affected by the acts of the firms, through trade as well as value creation are stakeholders (Abdulsalam & Babangida, 2020). Stakeholder theory revealed individuals and group affect a company's activities and the passage chosen by the company to tackle these effects.

In this day and age, many stakeholders can affect the understanding of an organisation's mission as well as its practice of reporting on sustainability. Previous studies have proved that social, environmental, and economic factors that have activities pertaining to sustainability reporting have led to increasing pressure to stakeholders who call for sustainable development, proper accountability and transparency, which enables the protection of the interest of the generations to come. It suggests that companies will react accordingly to expectations and concerns of those that have a stake in the organisation and some of the actions are in the way of tactical operations. Thus, the theory gives enlightenment pertaining to the issues that encourage firms concerned with sustainability reporting. This shows the stakeholders are given a head start that are dependent on assets controlled by them, the authority to impose and enact laws, that affect regulation over the consumers (Abdulsalam &

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Babangida, 2020). According to, Koaje et al (2020) the theory is based on the set of stakeholders requiring and deserving the attention of management thereby board of directors' (board size).

This study adopts Stakeholder Theory Freeman (2001) as its primary theoretical foundation, as it provides the most comprehensive framework for examining how board characteristics (board meetings, and board gender diversity) and firm characteristics (leverage and market capitalization) effect sustainability reporting among multinational corporations in Nigeria. Stakeholder theory highlights that businesses function in a complex context where a variety of stakeholders, including regulators, employees, consumers, communities, and foreign investors, are held accountable in addition to shareholders (Kuzey and Uyar 2017).

By strategically responding to these many stakeholder needs, sustainability reporting helps businesses uphold their credibility and build trust (Rajawat and Mahajan 2024). It should be noted that stakeholder theory gives a more comprehensive perspective that incorporates both economic and socio-political imperatives, whilst Agency Theory and Legitimacy Theory offer complimentary views on management monitoring and social expectations. In contrast, Resource Dependence Theory (RDT) according to Juwita and Honggowati, (2022) is considered inappropriate for this study due to its internal focus, which emphasizes organizations' distinct resources and competencies as sources of competitive advantage rather than external accountability demands. In conclusion, stakeholder theory offers the strongest and most contextually appropriate foundation for this research since stakeholder expectations, regulatory frameworks, and international disclosure standards are the main factors influencing sustainability reporting in African multinational corporations.

The study reviewed empirical studies relating to board and firm characteristics represented by (Board Gender Diversity, Board Meetings, leverage and market capitalization) and sustainability reporting, as documented over a number of years.

In relation to board gender diversity, Oluwatoyin et al (2021),Khalaf (2024), Alia et al (2024), Zampone et al (2024), Brogi and Lagasio (2025) and Perdana et al (2024) examined board composition and sustainability reporting among listed firms across the GCC, Europe, and other contexts. Using panel and Probit regression and drawing on stakeholder, resource-based, and agency theories, the studies consistently found that board gender diversity positively and significantly influences sustainability reporting. However, these studies did not distinguish between domestic and multinational corporations (MNCs), despite MNCs facing greater international stakeholder pressures and expectations to comply with frameworks such as the GRI. This leaves a contextual gap regarding whether board composition has a different effect on sustainability reporting in domestic and multinational firms. Sustainability frameworks such as the GRI.

Zhu et al (2024) examined the effect of board diversity on environmental sustainability disclosure using data from 200 manufacturing firms in Sub-Saharan Africa over 2010–2022. Employing cross-sectional data and multiple regression, it found that board gender diversity had a negative and significant relationship with environmental disclosure. However, the study focused primarily on local firms and did not distinguish multinational corporations (MNCs), which may face greater environmental responsibilities and international sustainability pressures. This leaves a contextual gap in understanding whether board diversity influences environmental disclosure differently in domestic and multinational firms.

Regarding the variable board meetings, Blay et al.(2025) examined environmental sustainability reporting, board qualifications, and institutional ownership in 1,969 firm-year observations of non-financial listed firms in Sub-Saharan Africa from 2012–2021 using panel-data estimation. The study found a significant negative relationship between audit committee meeting frequency and environmental sustainability

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reporting. However, its reliance solely on agency theory provides a narrow explanation of this relationship, as stakeholder theory could offer broader insight into how firms respond to the expectations of investors, regulators, communities, and other stakeholders. The study therefore leaves a theoretical gap in explaining why increased board activity may sometimes undermine rather than enhance sustainability reporting.

Modozie and Amahalu (2022), Anyigbah et al (2023), Ikpor et al (2024),Khalaf (2024), Mwasambu et al.(2024) employed multinomial logistic, fixed-effects, panel, FMOLS, and DOLS techniques to examine board meetings and sustainability reporting. Drawing on agency, stakeholder, and legitimacy theories, the studies generally found that more frequent board meetings increase the likelihood and extent of sustainability reporting. Their regional focus provides broader evidence beyond single-country studies; however, they did not distinguish between domestic and multinational firms. This leaves a contextual gap in understanding whether board meeting frequency has different implications for sustainability reporting among domestic and multinational corporations, particularly given the greater international sustainability pressures faced by multinational firms.

In contrast, Hasan et al (2022), Orazalin and Mahmood (2021), Gold and Aifuwa (2022) examined the effect of board attributes on sustainability reporting among listed firms in Europe and Nigeria. Using panel least squares, logistic regression, descriptive statistics, and GMM, and drawing on resource dependence, agency, and institutional theories, the studies found no significant relationship between board meeting frequency and sustainability reporting. However, the studies largely focused on domestic firms and did not distinguish between domestic and multinational corporations. This creates a contextual gap in determining whether board meetings have different implications for sustainability reporting in multinational firms, which face greater exposure to international sustainability expectations.

Regarding the variable leverage Almatin and Simatupang (2025), Bisma et al (2023) studied sustainability reporting and concluded that leverage and a negative and significant effect on sustainability reporting. These studies focused on domestic sector and omitted governance variables which is the gap this study is trying to fill. On the other hand the studies examined by Sabiya et al.(2024) and Razaq et al (2023) found leverage to have a positive and significant effect on sustainability reporting. This studies also omitted governance variables. As for the variable market capitalization, Kumar et al. (2022) and Rajawat and Mahajan (2024) examined market capitalization and sustainability reporting and found that market capitalization has a positive and significant effect on sustainability reporting. The studies were domestic which limits the generalizability of the findings.

METHODOLOGY

The purpose of this study is to examine the effect of board and firm characteristics on sustainability reporting of listed multinational firms in Nigeria. As a result, correlational design was used. The population of the study is the fifteen Listed multinational firms in Nigeria as at 31st December 2025. The study used census technique by capturing the whole population of the multinational firms. Data was extracted from the annual reports of the listed multinational firms in Nigeria from 2016 to 2025 a period of 10 years. The dependent variable was measured using Sustainability reporting Index (SRI), which is measured based on Global Reporting Initiatives (GRI) general standard disclosure indicator.

This particular indicator is considered to be a valid and suitable measure of SRI because it contains comprehensive measure of sustainability reporting performance (Chamo 2020). Therefore, the study applied SRI disclosure rating of 1 for the multinational firms that have made sustainability reporting disclosure in line with those items and 0 for those that have not. The scores accumulated by an individual multinational firm will be summed to get the overall score. The degree of disclosure of an individual multinational firm by dividing the

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total score revealed by the total GRI score index, namely:

SRI = Total score disclosed of each / Total GRI score index

Table 1 Summary of Variables and Measurement

Variables	Types of Variables	Measurements	Sources
Sustainability Reporting	Dependent Variable	SRI = Total score disclosed of each multinational firm divided by Total GRI score index	(Al-qudah & Houcine, 2024;Sabiya et al., 2024;Blay et al., 2025;Githaiga & Kosgei, 2022;Mwasambu et al., 2024)
Board Gender Diversity	Independent Variable	The proportion of females to total members on the board	Oluwatoyin et al 2021;Khalaf 2024; Alia et al 2024; Zampone et al 2024; Brogi and Lagasio 2025; Perdana et al 2024)
Board Meetings	Independent Variable	Number of times meetings held during the year	Hasan et al 2022; Orazalin and Mahmood 2021; Gold and Aifuwa 2022)
Leverage	Independent Variable	Measured using the ratio of total debt divided by total assets.	(Bisma et al., 2023;Al-qudah & Houcine, 2024;Febriyanti, 2021;Adekanmi, 2022;Kumar et al., 2022)
Market Capitalization	Independent Variable	The log of Share Price ×Number of Outstanding Shares	(Kumar et al., 2022;Rajawat & Mahajan, 2024)

Source: Compiled by Author, 2026

This study has the following regression model to examine the hypotheses of study as seen below:

$SustRepor_{it} = \beta 0 + \beta_1 BGEN_{it} + \beta_2 BMT_{it} + \beta_3 Lev + \beta_4 MCAP + \mu_{it}$

Where SustRepor = Sustainability reporting index of firm
BGEN = Board Gender Diversity
BMT = Board Meetings
Lev =Leverage
MCAP = Market Capitalization
β0 =constant
β1 – β4 = coefficient of the independent variables
it = Panel Data Subscript
μ =error term

RESULT AND DISCUSSION

Data collected during the course of the study were presented and discussed in this section. The descriptive statistics, correlation matrix and inferential statistics are presented in this section.

Table 2 Descriptive Statistics

Variables	min	max	mean	sd	Skewness	Kurtosis
SustRepor	0.12196	0.7561	0.4634	0.1442	- 0.3403	2.4416
BGEN	0	0.5833	0.2755	0.1291	-0.0863	2.2170
BMT	4	16	6	2.1005	2.0225	8.6522
Lev	0.40191	827.061	17.1056	114.2762	6.8569	48.0323

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Variables	min	max	mean	sd	Skewness	Kurtosis
MCAP	14.52341	33.05024	25.8519	3.50811	-0.6291	3.0954

Source: summary of STATA Output

Table 2 presents the descriptive statistics of explanatory and explained variables for this study. For example, the sustainability reporting (SustRepor) is the value of the ratio which falls from 0 and 1. It could also be expressed in percentage. Looking at the mean of sustainability reporting (0.4634) presented in Table 2 it shows that the mean of s is 46.34%. It represents the fact that sustainability reporting presents the fact that the average sustainability reporting over the investigation duration was deemed to be low. Furthermore, the greatest average disclosure is 75.61% while the minimal average social responsibility is 12.195%, showing a large dispersion of sustainability reporting activities across the sample firms. This discovery may be the result of studying a group of firms of various sizes and degrees of sustainability reporting awareness. The standard variance of 0.1442 is little far from the average, which suggests that there is moderate variation within the firms sampled.

The average level of board gender diversity across the Listed multinational firms is 0.2755, while deviation value of 0.1291 indicates that there is a moderate deviation of the data from the mean. The minimum and maximum board gender diversity of the Listed Multinational Firms in Nigeria within the period covered were 0 and 0.5833 respectively. This implies there were boards that had no female members.

The average number of board meetings of a firm across the Listed Multinational Firms in Nigeria is 6, while deviation value of 2.1005 indicates that there is a moderate deviation of the data from the mean. The minimum and maximum number of board meetings of the Listed Multinational Firms in Nigeria within the period covered were 4 and 16 respectively.

The average leverage of a firm across the Listed Multinational Firms in Nigeria is 17.1056, while deviation value of 114.2762 indicates that there is a wide deviation of the data from the mean. The minimum and maximum leverage of the Listed Multinational Firms in Nigeria within the period covered were 0.40191and 827.061 respectively.

The average market capitalization of a firm across the Listed Multinational Firms in Nigeria is 25.8519, while deviation value of 3.50811indicates that there is a moderate deviation of the data from the mean. The minimum and maximum market capitalization of the Listed Multinational Firms in Nigeria within the period covered were 14.52341 and 33.05024 respectively.

Table 3 Correlation matrix

	SustRepor	*BGEN*	*BMT*	*Lev*	*MCAP*
SustRepor	1.0000				
BGEN	0.1874	1.0000			
BMT	0.0266	-0.0749	1.0000		
Lev	0.0529	-0.0234	-0.0594	1.0000	
MCAP	0.1225	-0.2022	0.1762	-0.2213	1.0000

Source: Author's Computation using Stata Output, (2026)

Where the correlation coefficient among the independent variables is higher than 0.8 then, it is most likely that multicollinearity would exist among the independent variables thus, the assumption of regression is violated (Gujarati 2004). Table 3 shows the correlation between explained and explanatory variables of the study.

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The variables board gender diversity and board meetings, leverage and market capitalization move in the same direction with sustainability reporting.

To further consider the collinearity issues, this study employed Variance Inflation Factor (VIF) test to measure its magnitude in our model, where the variance factors for each variable are estimated. There is no multicollinearity problem, as a result of the VIF values for all the variables being less than 9. According to (Hair et al., 2006) the acceptable VIF level should not exceed 9. The results of the VIF test ranges from a minimum of 1.03 to a maximum of 1.13 which are all less than 9 thus there is no collinearity among the explanatory variables. To further substantiate this claim, the mean VIF is 1.07, also affirming that there is no multicollinearity among all the explanatory and control variables of the study.

Diagnostic Test

As a rule before the final regression was conducted, this research ran a diagnostic analysis to maintain the un-biasness of the parameters as argued by Wooldridge (2011). To ensure validity and reliability of the statistical inference of the regression model, relevant diagnostic tests were conducted. The dataset is panel in nature; thus, the study runs both random effect and fixed effect models. Researchers often rely on the Hausman (1978) specification test in order to decide between the fixed effect and Random effect model. Hausman specification test conducted for the model produced p-value of 0.9977, which is statistically not significant. As a result of this, the result of the random effects Gls model was considered suitable for the analysis.

Fixed Effect Robust Model Result

The fixed effect robust result is presented in table 3 below:

Table 4 Fixed Effect Robust regression result

SustRepor	Coef.	Std. Err.	Z	P > z	VIF
BGEN	0.3382	0.0659956	5.13	0.000	1.05
BMT	0.0032	0.0038	0.86	0.392	1.03
Lev	0.0001	0.0001	0.86	0.397	1.06
MCAP	0.0092	0.0037	2.51	0.012	1.13
CONS	0.1156	0.1020	1.13	0.257	
Wald Chi2(4) =				41.83	
Prob > Chi2 =				0.000	
R-sq:				0.2428	
Heteroskedasticity test (p-value):				0.0000	
Hausman specification test (p-value):				0.9977	
Mean VIF				1.07	

Source: Author's Computation using Stata Output, (2026)

Note: The chi 2 tests the joint null hypothesis that the coefficients of BGEN, BMT, LEV and MCAP are simultaneously equal to zero. The reported chi-statistic corresponds to the joint significance test from the random estimation with robust standard errors.

The random-effects model was selected based on the Hausman specification test (p > 0.9977), which failed to reject the null hypothesis that the random-effects estimator is consistent and supported the use of the random effects specification. The heteroskedasticity test was also statistically significant (p < 0.000), indicating the presence of heteroskedasticity. Consequently,

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robust standard errors were used in the random effects regression to obtain inference that is robust to heteroskedasticity. The overall chi2 (4) = 41.83 ($p < 0.000$), tests the joint null hypothesis that the coefficients of BGEN, BMT, Lev and MCAP are simultaneously equal to zero.

The result in table 4 shows the result obtained from the random effect GLS Regression which was interpreted after conducting all relevant tests. The chi statistic is 41.83and the P-value is 0.000 which is significant at 1%. This shows that the overall model is statistically significant. Moreover, it implies that the research explanatory variables are fit enough to predict the level of variation in the outcome of the variables in the Listed Multinational Firms in Nigeria.

The model reports an R-squared value of 0.2428, indicating that approximately 24% of the variation in the dependent variable is explained by the included explanatory variables. While this suggests that the model has modest explanatory power, the relatively low R-squared also indicates that a substantial proportion of the variation remains unexplained. This may reflect the influence of other relevant factors that are not captured in the current specification, such as firm-specific, industry-level, macroeconomic, or institutional variables. The omission of these factors may limit the model's overall explanatory power.

The relationship between board gender diversity and sustainability reporting is positive as indicated with the coefficient of 0.3382 which is statistically significant at 1% (from p-value of 0.000). This implies that increase in board gender diversity will have a positive effect on sustainability reporting of Listed Multinational Firms in Nigeria by 33.82%. This implies that as female directors increase sustainability reporting of Nigerian multinational firms will increase other things being equal. This is in line with stakeholder theory which states that as board gender diversity increases ssustainability reporting also increases.

The study could not establish any relationship between board meetings and sustainability reporting of Listed Multinational Firms in Nigeria as the result is insignificant as the p-value of achievement is 0.392 therefore the study concludes there is no significant relationship between board size and sustainability reporting of Listed Multinational Firms in Nigeria.

The study could not establish any relationship between leverage and sustainability reporting of Listed Multinational Firms in Nigeria as the result is insignificant as the p-value of achievement is 0.0.397 therefore the study concludes there is no significant relationship between leverage and sustainability reporting of Listed Multinational Firms in Nigeria.

The market capitalization variable has a coefficient value of 0.1156. and probability value of 0.012 This shows that market capitalization has a positive and significant effect on sustainability reporting of Listed Multinational Firms in Nigeria. This implies that an increase in market capitalization by one percents increases sustainability reporting of Listed Multinational Firms in Nigeria by 11.56% other things being equal. This finding is in line with Stakeholder theory which explains that firms that hold more meetings are more likely to increase sustainability reporting.

CONCLUSION AND RECOMMENDATIONS

The research found that board meetings and leverage have no significant relationship with sustainability reporting of Listed Multinational Firms in Nigeria. This means an increase or decrease in the variables does not affect the sustainability reporting. The study reveals that board gender diversity and market capitalization have a significant and positive effect on sustainability reporting of Listed Multinational firms in Nigeria. This indicates that an increase in female directors and market capitalization will lead to increase in sustainability reporting and the other way around. This may lead to increased investment opportunities and thereby increased revenue.

Implication of the study

Sustainability reporting has an effect on development of the environment where multinational firms operate, and can therefore improve the social, environmental and economic development of developing countries like Nigeria.

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Limitation of the study

The ability of this study to capture what is expected depends on the accuracy of the data extracted from the annual reports of the Listed Multinational Firms in Nigeria. Furthermore, another limitation of the study is the model's relatively modest explanatory power, as indicated by an R-squared value of 0.2428. This suggests that the explanatory variables included in the model account for approximately 24% of the variation in the dependent variable, while a considerable proportion remains unexplained. The unexplained variation may be attributable to relevant factors that were not included in the model, such as industry conditions, macroeconomic factors, or other institutional variables. The omission of such variables may constrain the model's ability to fully explain changes in the dependent variable.

Future research could address this limitation by incorporating additional theoretically relevant variables and alternative measures that may provide a more comprehensive explanation of the outcome. Other characteristics, such as board tenure, directors' expertise, independence, diversity, ownership structure, profitability, firm size were not considered and may provide additional insights into the relationship examined. Consequently, the exclusion of these potentially relevant characteristics may limit the comprehensiveness of the model and contribute to its modest explanatory power. Future studies could incorporate a wider range of board and firm characteristics to provide a more comprehensive understanding of the relationship.

Another limitation of the study is its relatively narrow sample scope, comprising 15 multinational firms observed over a ten-year period. Although the ten-year period provides a meaningful longitudinal perspective, the inclusion of only 15 firms limits the cross-sectional breadth of the study and may constrain the generalizability of the findings to the wider population of multinational firms. Differences in firm size, industry, geographical operations, and governance structures may also influence the relationships examined but may not be fully captured by the selected sample. Future research could therefore expand the sample to include a larger and more diverse number of multinational firms across different industries and geographical settings.

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