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Management of risk of corporate distress and failure before, during and after the COVID-19 pandemic via corporate governance performance

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Abstract

The impact of the recent pandemic on aspects of corporate governance, business, a country's economy, corporate distress, failures, and the general well-being of companies has been a subject of robust discussion. This study was conducted to examine the influence of corporate governance in mediating and managing the risk of corporate distresses and failures before, during, and after the COVID-19 pandemic. The study employed the Panel Autoregressive Distributed Lag (PARDL) model on annual data from 2010 to 2021 to analyze the short-run and long-run effects of the pandemic on corporate governance and sustainability performance. The results from both the short-run and long-run effects are similar, revealing that the estimated coefficient of the debt-to-equity ratio, finance costs, and COVID-19 related costs are negative but significant in the models. Conversely, the coefficients of the current ratio, quick ratio, and board size from both short-run and long-run effects show positive and significant results. Generally, the findings reveal that the coefficient of board size, as a proxy for corporate governance, has a very strong influence in mediating the risk of corporate distress and failure before, during, and after the pandemic period, up to a certain level until the pandemic's impact was severe on companies' production, sales, and other operational performance. Based on the above findings, it is recommended that the board of directors and other management boards employ enhanced good governance strategies and improve risk control mechanisms that enhance company performance during the pandemic to help avert corporate distresses and failure rates thereafter.

Keywords: Company performance, Corporate distress, Corporate governance, COVID-19 pandemic, Default risk, Risk management, Sustainability performance.

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1. Introduction

Corporate distress and failure have been prominent and longstanding topics in the field of Accounting and Financial Management for about three to four decades, and they have gained renewed attention due to the sudden emergence of the COVID-19 pandemic, which created a harsh working environment for companies [1]. The risk of managing corporate distress during this period was so high that it led to numerous corporate failures. The emergence of the pandemic in 2019 has sparked extensive arguments and calls for further research on how corporate managers can better govern and manage risks more effectively should similar crises occur in the future [2, 3]. Arguments in the global literature suggest that corporate governance mechanism failed to prevent corporate distress and failures worldwide, leading to the need for more research in this area [4, 5]. For instance, many scholars revealed that the quality of governance helped companies to mitigate risks such as takeover threats, distress, or even total failure during the pandemic[3, 6, 7], while others argue that corporate governance outrightly failed to protect companies and their shareholders' wealth, resulting in the failure of corporate organizations during the pandemic [4, 5]. Furthermore, many scholars suggest that the pandemic crisis may necessitate structural changes in corporate governance codes and mechanisms to prevent future recurrences [8, 9], while others propose no changes in codes but rather amendments in risk management practices [6, 9]. This study adds to the body of knowledge by providing a clear understanding of these arguments. The pandemic has impacted every aspect of life and professions, including Accounting, as it significantly affected Corporate Governance practices, Financial Management, Auditing exercises, financial statements preparations, and the general management of companies. Prior studies have identified various risks stemming from the shock of COVID-19, such as liquidity risk highlighted by Demmou, et al. [10], who found shortfalls in corporate liquidity, increased corporate distress, overhanging debt, and increased leverage during the pandemic. Singh and Rastogi [11] also revealed that corporate distress was particularly prominent amongst Small and Medium Enterprises (SMEs) during the period. Recently, the implications of the COVID-19 pandemic for corporate organizations have caused concern among many investors due to its direct correlation with negative impacts on companies' performance, declines in portfolio returns, corporate distress and failures worldwide. In addition, investors, financial statement users, and other stakeholders are worried about the severe risk posed by the pandemic on corporate management, which is rooted in corporate governance. To restore confidence among stakeholders, strong governance practices, robust risk management structures, and IT-governance structures must be incorporated to manage and mitigate risks to the lowest possible level [7, 12, 13]. These are some of the fundamental motivations behind this study.

Linking corporate governance with corporate distresses, failures, and risks makes this study important and timely, particularly due to the high rate of failures caused by the recent pandemic [14]. During the pandemic, corporate distress was prevalent, especially among SMEs. Corporate distress refers to the problem that companies experience before bankruptcy proceedings occur that can ultimately lead to complete corporate failure [11]. Corporate distress precedes corporate failure, and if it persists for too long without prompt actions from the board of directors, it can transform into bankruptcy proceedings and total failure. Therefore, this study is timely in addressing the situation before it deteriorates into total failure. The study shows that effective corporate governance coupled with strong risk management controls can salvage the situation around the world. Companies experiencing distress are characterized by the following features: loan accumulation, difficulties in paying workers' salaries, worker layoffs, loan repayment defaults, fast reductions in equity value, liquidity problems, and yearly loss-making [15]. This is where good governance becomes crucial, especially during the pandemic when almost all companies were vulnerable to distress related to liquidity risk, profitability risk, solvency risk, and default risk, amongst others [3]. Companies with good corporate governance measures in place have a better chance of mitigating all threats of corporate failure through timely intervention, compared to those without proper governance structures [16].

Additionally, this study is significant and timely as it can help companies in rebuilding their lost reputation and confidence. It can also aid stakeholders such as investors, shareholders, and managers to make the right decisions concerning their companies' shares and investment portfolios. The inherent risks stemming from the pandemic over the past two years have left many companies vulnerable by exposing them to both systematic and unsystematic risks. The pandemic acted as an environmental risk, severely impacting, and disrupting economic activities all over the world. In this regard, Chhapra, et al. [17] defined systematic risk as "distress risk". The impact on the global economy is still in the process of recovery, as evidenced by persistently volatile global economic indicators and markets, high inflation rates, fluctuating commodity prices, declining GDP, and exchange rates. The shock also led to default risk as the pandemic significantly affected production and sales revenue, resulting in reduced profitability and increased pressure on assets due to mounting loans. In response to the shock, boards of directors sought additional loans with limited or no production, leading to a higher risk of defaults and numerous corporate distresses during the period [10].

Having established the link between corporate governance and the risk of corporate distress and failure, it is essential to narrow down the problem statement and study objective. The link between corporate governance and the management of the risk of corporate distress and failure arose to increasing economic failures around the world. This has been revealed by global economic indicators, such as inflation rates, and the rising prices of commodities. Many countries and companies have relied on debt to survive, especially during and after the pandemic, which has raised concerns among stakeholders. Companies are vulnerable to highly volatile economic environments characterized by default risks, financial insolvency, liquidity risks, solvency risk, as well as incessant declines in profitability and sales revenues, which are assumed to be the negative effect of the recent pandemic that impacted the world economy [15, 18]. The above-mentioned indicators of corporate distress during and after the pandemic are considered serious problems requiring urgent attention and intervention. The purpose of this study is to reduce these deleterious impacts or possibly avert failures around the world. Additionally, it aims to raise awareness among corporate managers and boards of directors regarding the need to improve their governance strategies. Many companies have been struggling to operate due to the pandemic and have faced various difficulties. This confirms that many companies have failed, and more challenges are still emerging due to overdue debt and low production and sales caused by liquidity risks from the pandemic [15]. Historically, many scholars have addressed the relationship between corporate governance and corporate distress, establishing that good governance reduces the risk of corporate distresses and failures [6, 19, 20]. However, the weakness of corporate governance to curtail the risk and shock of the COVID-19 pandemic has raised concerns among stakeholders and led to questions regarding the failure of corporate managers to use their expertise during this period to avert corporate distress and failure [4]. This has also raised doubts among researchers regarding the effectiveness of corporate governance, managers, boards of directors, and other management staff in controlling and preventing corporate failures in recent times. One of the objectives of good corporate governance is to reduce unsystematic (internal) risks, while all activities of companies must indirectly reduce systematic (external) risk through the actions of boards of directors and other management staff in the corporate environment in which companies operate [6]. The corporate sectors to which companies belong drive the economies of nations by reducing all forms of risks. During the pandemic, especially at its peak, company managements were helpless as all operations came to a halt, which worsened the performance and increased corporate distress and failure around the world [4]. However, research has shown that certain sectors, such as the Pharmaceutical and Health sectors, benefited from the pandemic. Apart from the above, to the best of the researchers' knowledge and the scope of this study, no prior research has combined corporate governance, risk management, and corporate distress or failure during and after the pandemic in a single study, as this study does within the African context. Very few similar studies exist in the world literature. Therefore, this study adds to the body of knowledge in this regard and addresses the aforementioned problem. To solve this problem, this study examines how corporate governance mediated and regulated the risks of corporate distress and failure during the pandemic. This is in response to the recovery strategies that companies need to undergo to achieve full restoration and prevent similar future risks, ensuring the continuity and sustainability of companies. The other sections of this study are organized as follows: concept definition, review of the theoretical foundation and prior studies, model specifications, analysis and interpretations, study implication, and conclusion.

2. Concepts, Theories and Literature Review

Corporate governance refers to the way in which companies are managed, directed, and controlled by their top management team and board of directors, or those saddled with the responsibility [21]. Recently, stakeholders have been concerned about the rate of corporate failures around the world, arguably caused by the COVID-19 pandemic. Many scholars revealed that the recent pandemic exposed companies to numerous risks, threatening their survival and leading to the failure of many corporate organizations [4]. The risk in this study is related to the recent challenges that companies faced, and are still facing, during the pandemic due to its negative effects on companies' operations. These risks have resulted in many corporate distresses and failures despite having good governance practices in place. This proves that there is a limit to the risk that companies can accommodate; otherwise, their going concern becomes threatened, and they start experiencing distress, losing operational confidence, and struggling for survival [4, 22]. Corporate distress always comes before bankruptcy proceedings. It is a problem that companies experience before an organization eventually fails [11]. This means that corporate distress precedes corporate failure, and when distress lingers too long, it degenerates into bankruptcy proceedings and total failure. This is why that good corporate governance is very important as it is the only tool that corporate managers can use to sustain their businesses, especially during hard times.

Companies experiencing distress are characterized by the following features: financial risks, liquidity risks, solvency risks, default risks, and sustainability risks [18]. This is where good governance is needed, especially during the pandemic when almost all companies are vulnerable to distress-related risks and are struggling to survive. Companies that have good corporate governance in place stand a very good chance of mitigating all threats of corporate failure with timely intervention compared with companies without good governance [16]. This leads the study to the review of theoretical literature.

This is a multi-theoretical based study that combines Agency theory, Stakeholder theory, and Portfolio theory, supported by principles from Management Accounting and Financial Management, such as Capital Investment Appraisal, Arbitrage Pricing Theory, and Capital Asset Pricing Model (CAPM). In Financial Management, as postulated by Portfolio Theory, there is a general belief that risk and return are correlated [23, 24]. "The higher the risk, the higher the returns". However, many scholars argue that sometimes too much risk may negatively affect companies' returns [25]. For instance, the recent pandemic has proven this assertion wrong, as the challenges and risks posed by the COVID-19 pandemic reached a point where companies could not bear it anymore, leading to reduced returns, corporate distresses, and failures. This suggests that the belief in the positive correlation between risk and return is limited to a certain trade-off of risk. Beyond this trade-off level, companies become vulnerable to both systematic and unsystematic risks, which could lead to distress and failure [26]. This finding is supported by Munusamy and Natarajan [25], which observed that risk and return are positively correlated only when markets are less vulnerable, but show little or no correlation when the market is highly vulnerable. Agency Theory led to agency costs associated with managing companies on behalf of shareholders. This theory ensures that managers are accountable to shareholders and should discharge their fiduciary duties responsibly and satisfy their shareholders. The study asserts more agency costs were incurred during the pandemic compared to before and after, and excessive agency costs could lead to corporate distresses. On the other hand, the Stakeholder theory postulates that the responsibility of corporate managers should not be limited to shareholders alone, but should also be extended to other stakeholders in the form of corporate social responsibility to avert corporate crises that can lead to possible risks of corporate distress and failure [24]. This is because it is not only shareholders that the heat of corporate failure affects if it happens but other stakeholders that the failure can directly or indirectly affect. This leads to the following general review of related prior studies.

The discourse on corporate governance, corporate distresses, and failures has been examined in so many ways. Scholars such as Kumar and Rao [8] found little improvement between the 2008 crisis and the COVID-19 pandemic crisis. Both crises revealed large gaps and challenges that led to corporate distress, which need to be addressed by corporate managers for future corrections. Kaur, et al. [12] examined the new boardroom challenges posed by the pandemic outbreak, including virtual boardroom, IT-governance, threats to continuity and sustainability, and dynamic and systematic risk management. They found that the introduction of virtual board meetings and other quick responses from companies' managers helped sustain businesses during the pandemic.

In the review conducted by Chen, et al. [7], a systematic literature review on emerging markets explored the impact of COVID-19 on human resources management. The findings revealed that the pandemic posed enormous risk to human resources management. Caratas, et al. [6] examined the challenges faced by companies during the pandemic and how governance strategies helped them adapt to the new business environment. The results showed that good governance practices helped companies mitigate risks such as takeover threats, distress, or even total failure.

Chen, et al. [7] explored the extent to which independent directors helped companies' recovery process during and after the pandemic. They found that directors with higher remunerations, higher levels, and independence helped companies recover quicker. Naeem, et al. [27] studies the effect of board size and board diversity on sustainable corporate governance practices during the pandemic. The findings revealed that gender diversity moderated the effect of the pandemic on firms in the financial sector, and sustainable corporate governance was practiced in financial firms during the pandemic.

Alshhadat and Al-Hajaya [28] analyzed the effect of the pandemic on corporate governance and suggested a model for governance in times of turbulence. Their findings revealed that developing a new and flexible governance body could address the economic and non-economic consequences resulting from the pandemic. Hsiao, et al. [3] explored the relationship between corporate governance and systematic risk during the pandemic. The results showed that corporate governance mitigated the risks of the pandemic in both state-owned and privately owned companies, especially those with good governance, strong structures, and adequate board sizes.

Habib and Kayani [29] examined the potential impact of working capital management (WCM) on the likelihood of financial distress before and during the pandemic, revealing a significant negative influence of WCM on firms' likelihood of financial distress. Puławska [30] evaluated the effect of the COVID-19 pandemic on insurance companies' financial statements. The results revealed that the pandemic had a negative affected on the functioning of insurance companies, leading to decreasing solvency ratios and ROAs.

Nugroho, et al. [14] examined financial distress, systematic risk, profitability, and stock returns during the pandemic. They found that stock returns impacted financial distress through systematic risk and profitability. Routledge [31] studied insolvency policy law to maximize opportunities for the rescue and rehabilitation of companies. They suggested that a value-based insolvency law that is debtor-friendly should be encouraged.

Khatib and Nour [18] studied the effect of the COVID-19 pandemic on corporate governance attributes and firm performance. They found that the pandemic affected aspects of company performance, corporate governance, liquidity, and leverage, but the difference before and after the pandemic was not significant. Board diversity had a significant positive impact on performance during the pandemic, while the board was insignificant during the crisis.

Elsayed, et al. [4] examined whether corporate governance reform in the UK could influence corporate failure, and how efficient it was in times of distress. The findings revealed that higher executive compensation, large board size, and social networks led to corporate failure. The study also found that board diversity and the independence of oversight committees did not reduce the likelihood of corporate failure. The study further revealed that corporate governance variables were powerless in severe distress situations. Beryansyah and Arrozi [22] investigated the influence of managerial ownership, financial distress, and leverage on the going concern of companies using profitability as a proxy variable. Their findings revealed that financial distress negatively affected the going concern and leverage during the pandemic, while managerial ownership had a significant impact on the going concern. ROA strengthened the influence of financial distress and leverage on the going concern up to a certain level. Kumar, et al. [2] identified and analyzed risk mitigation strategies for perishable food supply chains during the pandemic. Their study suggested that collaborative management, proactive business continuity planning, and financial sustainability were effective risk-mitigating strategies. Furthermore, Wu, et al. [1] employed both multi-layer perception artificial neural networks and the traditional Altman Z-score model to predict company failure. They found a 99.4% and 86.54% failure rate, respectively, due to the pandemic. They found that ESG negatively impacted company performance during and after the pandemic, and ESG performance had no significant impact on the overall financial performance of companies. Demmou, et al. [10] investigated the risks and policy responses of insolvency and overhanging debts of companies due to economic shocks from the COVID-19 pandemic. They found that many companies depleted their equity to buffer increases in the leverage ratio during the crisis as a survival mechanism. They also examined high debt levels in investment for quick recovery after the pandemic, but crises related to insolvency slowed down the recovery of many companies.

Crespí-Cladera, et al. [32] studied financial distress and the COVID-19 crisis in the hospitality industry, revealing that 25% of the selected firms would face distress if revenue dropped by 60%, and 32% would face distress if revenue dropped further by 80%. Many firms in financial distress would face solvency problems as total assets would be insufficient to pay all debt, particularly affecting small and medium firms. Singh and Rastogi [11] examined how corporate governance helped SMEs before and after the COVID-19 pandemic. They found that the level of distress in the current year was determined by previous years' distress or financial instability, and marginal increases in ROE and ROA reduce companies' distress.

Amankwah-Amoah, et al. [5] studied the COVID-19 pandemic and business failure, revealing that the pandemic and other global crises accelerated the rate of business failure around the world. Khan and Ullah [33] estimated the extent of financial distress caused by the COVID-19 pandemic among listed firms using Altman's Z-score. Their findings revealed a significant increase in the degree of financial distress among the selected firms, which could lead to corporate failure if quick recovery actions were not taken. Supitriyani, et al. [34] determined the bankruptcy prediction of selected transportation sector companies before and after the COVID-19 pandemic. They found an 85.75% level of bankruptcy based on Altman's Z-score and a 73% level based on the Springate model.

Onsay [15] examined the profitability, solvency, gearing, and liquidity capacity of companies during the pandemic. The findings revealed that there was no significant sign of financial distress before COVID-19, but the presence of the pandemic revealed solvency and liquidity problems, which could predict financial distress. Lee and Thong [35] investigated the factors affecting the relationship between board gender diversity, firm performance, and the risk of corporate distress. They found a positive relationship between the percentage of females on the board of directors and firm performance, as well as a negative association between corporate distress and the proportion of female directors.

Boiral, et al. [36] reviewed and analyzed prior studies on the organizational management of the COVID-19 pandemic. Their results revealed the threats and opportunities that arose from the pandemic, suggesting new innovations to mitigate future risks. Zattoni and Pugliese [9] studied corporate governance in the wake of a systemic crisis and how corporate governance mechanisms shaped and directed the decision-making of companies during the pandemic. They found that the pandemic crisis triggered structural changes in governance. In addition, Koutoupis, et al. [37] reviewed related literature on corporate governance, ESG, and CSR during the pandemic. The findings revealed inconclusive results regarding the relevance of ESG, CSR, and financial performance. They suggested empirical studies for further clarification. Kaur, et al. [12] examined the boardroom challenges, board effectiveness, and stewardship during the pandemic. They suggested that the right steward attitude, the diligence of the board, and other management boards led to increased performance and satisfied shareholders with higher returns. Kumar and Rao [8] examined the risk posed to companies' governance during the pandemic and suggested likely structural adjustments to avert future risks.

Truong [38] studied the impact of corporate governance on financial distress and found that firms with strong corporate governance practices had a low probability of financial distress compared to firms with weak corporate governance. Chhapra, et al. [17] investigated the relationship between default risk and stock returns. They found that stocks of companies significantly exposed to default risks during the pandemic experienced a decline in stock returns.

In summary, these studies examined various aspects of corporate distress, failures, and governance during the COVID-19 pandemic. They explored the challenges faced by companies, the impact of governance practices on distress likelihood and recovery, risk mitigation strategies, and the effects of the pandemic on financial performance and solvency. The findings highlight the importance of strong corporate governance, risk management, and proactive measures in mitigating distress and ensuring the sustainability of companies during and after crises.

3. Discussion of Gaps from the Literature

This study is unique because there are no known prior studies that have combined corporate governance performance before, during and after the pandemic, as well as the management of risks of corporate distress and failure in Africa based on the extent of our research and as of the time when this work is being carried out. Studies in this area have focused on the impact of COVID-19 and firm performance and financial statements [39-41]. Generally, prior studies have mainly focused on the COVID-19 pandemic and corporate governance [18, 28], COVID-19 risk and corporate distress and failure [3, 8, 14, 15, 35], while studies on corporate governance and corporate distress and failure studies are limited in the world literature [4]. To the best of the researchers' knowledge, there is no known research that has covered all the variables mentioned above in a single study. Many studies on corporate failure have employed failure predictions using Altman Z-score or other discriminant scores to predict future possible failure, but this study employed corporate governance mechanisms and an accounting ratios approach. The big question here is how sustainable companies are and to what extent stakeholders can rely on the reports of companies after the risk posed by the COVID-19 pandemic. This scenario has made many stakeholders worried and eager to know the security of their investments and the performance of different portfolios, considering the rate of corporate distress and failure around the world. Assessing the reasons for the rise in corporate failures around the world despite practicing good corporate governance is highly imperative. This has sparked arguments among scholars in the literature over whether corporate governance failed or not in curtailing corporate distress and failure [4, 5], while some have revealed that corporate governance does help mitigate the risk of corporate distress and failure. Some scholars [8, 9] have suggested structural changes and adjustments to corporate governance codes, while others, such as Caratas, et al. [6], have reported that a major amendment should be limited to the risk mechanism of codes.

It has also been discovered that there are limited empirical studies in the global literature on the COVID-19 pandemic and corporate governance performance relating to risk management and corporate failure. Therefore, this study is different from other prior studies because it combines corporate governance with the management of the risk of corporate distress and failure, taking into consideration the effect of the COVID-19 pandemic in the African context.

Prior studies have also been limited to sector analysis, while the present study covers all sectors according to the Johannesburg Stock Exchange classification. These are some parts of the gaps that this study addresses. Lastly, the study also adds to the body of knowledge as it can serve as a source of information for decision-making by investors, governments, company directors, management, and other stakeholders.

4. Data Source and Methodology

4.1. Data

To assess the effect of corporate governance, risk management, and corporate distress on the sustainability performance of the selected companies, the researchers utilized a panel data series spanning the period 2010-2021. The choice of this period was dictated by the constraints on data availability and the time that preceded the pandemic. These research results were based on the annual reports of 42 companies of different sizes from various sectors. These firms have either been negatively affected by the recent pandemic or have been struggling to adapt to the new business environment dictated by the pandemic.

The study examines the pandemic's impact on selected listed companies in South Africa, considering the management of risk and corporate governance measures in place in response to the recovery strategies that companies need to undergo to achieve full restoration and prevention of future similar risks, in order to determine future successes and failures of companies. This study employed accounting ratios and other variables such as return on assets (ROA), net profit margin (NPM), and return on equity (ROE) as dependent variables. The debt-to-equity ratio (DER), current ratio (CR), finance cost (FIN), quick ratio (QR), COVID-19 pandemic expenses (COEXP), and board size (BDS) are explanatory variables.

The dataset used in this study was extracted from the published annual reports of companies listed on the Johannesburg Stock Exchange (JSE). Table 1 presents summary statistics and correlation analyses of the variables under consideration. The statistics demonstrate wide variations amongst the series as the data is dispersed around their means. The average values of return on assets, net profit margin, and returns on equity are 9.880, 12.499 and 16.770, respectively, reflecting the high sustainability performance of the selected firms. The average values of COVID-19 expenses (422.090) and the quick ratio (1.029) were the highest and lowest among the explanatory variables. The standard deviation indicates that there is wide variation, particularly in financial costs and COVID-19 expenses, compared to other variables.

The correlation results are shown in the lower panel of Table 1. The debt-to-equity ratio, financial cost, COVID-19 expenses, and board size are all negatively correlated with sustainability performance indicators, according to the correlation analysis. On the other hand, the current and quick ratios were positively correlated with the performance indicators. Furthermore, the analysis revealed no evidence of multi-collinearity among the variables, as the values of the series were moderately low.

4.2. Methodology

This research applied the panel autoregressive distributed lag model (PARDL) created by Pesaran, et al. [42] to handle relating to the long-run and short-run dynamics of the variables. The method is robust to different integrating orders for the variables, except for variable I (2). It handles both long- and short-run relationships in one step without information loss. Additionally, it incorporates the pooled mean group estimator, which combines the pooled and averaged data, allowing the intercept, short-run coefficient, and error variances to differ across groups. This method is an improved version of Pesaran and Smith's mean group (MG) estimator [43], in which the coefficient values are averaged for each country and the slope coefficients and error variances are assumed to be equal. Additionally, the technique eliminates endogeneity issues by incorporating lag length of both the dependent and independent variables into the model, which results in consistent and reliable estimates. Thus, the panel ARDL model can be expressed as follows:

$$Y_{it} = \sum_{j=1}^{p} \lambda_{ij} Y_{i,t-j} + \sum_{j=0}^{q} \varphi'_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (1)$$

Where $i = 1,2, \dots, N$ stands for the number of the selected firms; $t = 2010, , \dots, 2021$ is the time period; Y_{it} represents the outcome variables, including return on assets (ROA), net profit margin (NPM), and return on equity (ROE); $Y_{i,t-j}$ is the lagged outcome variables; X_{it} is a $kx1$ vector of explanatory variables; φ'_{ij} are the $kx1$ coefficient vectors, λ_{ij} are scalars, μ_i is the country-specific effects, and ε_{it} is the error term. Given that all the variables in the model are cointegrated and the error term is integrated of order zero $[i.e. I(0)]$ for all cross-sections, Equation 1 is re-parametrized into an error correction model as follows:

$$\Delta Y_{it} = \rho_i\left(Y_{i,t-1} - \phi'_i X_{it}\right) + \sum_{j=1}^{p-1} \lambda^*_{ij} \Delta Y_{i,t-1} + \sum_{j=1}^{q-1} \varphi'_{ij} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (2)$$

Where $\rho_i = -(1 - \sum_{j=1}^{p} \lambda_{ij})$ is the adjustment speed, $\phi_i = \sum_{j=1}^{p} \lambda_{ij} / (1 - \sum_j \lambda_{ij})$ denotes the vector of long run parameter, and both $\lambda^*_{ij} = -\sum_{m=j+1}^{p} \lambda_{im}$ and $\varphi^*_{ij} = -\sum_{m=j+1}^{q} \varphi_{im}$ represent the short-run parameters, respectively. The parameter is considered negative and significant based on the prior assumption that the variables indicate a return to a long-run equilibrium [44].

Table 1.
Descriptive statistics and correlation matrix.

Variables	**ROA**	**NPM**	**ROE**	**DER**	**CR**	**FIN**	**QR**	**COEXP**	**BDS**
Mean	9.88	12.5	16.8	3.11	1.29	149	1.03	422	13.5
Maximum	92.9	34.3	118	142	4.98	594	19.9	353	26.0
Minimum	33.6	24.0	42.7	0.00	0.00	5.00	0.00	0.00	6.00
Std. dev.	13.8	29.6	29.9	7.38	0.74	62.6	1.23	67.7	3.56
Obs.	480	480	480	480	480	480	480	480	480
Correlation matrix									
ROA	1.00								
NPM	0.26	1.00							
ROE	0.63	0.25	1.00						
DER	-0.15	-0.47	-0.16	1.00					
CR	0.30	0.13	0.07	0.20	1.00				
FIN	-0.10	-0.07	-0.03	0.20	-0.17	1.00			
QR	0.14	0.45	0.08	0.04	0.34	0.05	1.00		
COEXP	-0.13	-0.04	-0.11	-0.05	0.03	-0.03	0.05	1.00	
BDS	0.16	0.06	0.02	0.14	0.05	0.16	-0.29	0.17	1.00

5. Empirical Results

The empirical analysis initially examined the existence of cross-sectional dependence among the firms under consideration using the Breusch and Pagan [45] and Pesaran, et al. [42] Scaled Lagrange Multiplier (LM) test, as well as Pesaran and Smith [43] Cross-sectional dependence (CD) tests by Breusch and Pagan [45]. Table 2 presents the results of the cross-sectional dependency tests. As shown in Table 2, there is evidence of cross-sectional interdependency, suggesting that a potential shock in one firm could be transmitted to other firms.

Table 2.
Cross-sectional dependence results.

Test	Statistics	Prob
Breusch-pagan LM	212.468***	0.000
Pesaran scaled LM	18.617***	0.000
Pesaran CD	9.162***	0.000

Note: *** Represent the 1% level of significance.

Table 3.
The results of CIPS unit root test.

Variables	Level	First difference
ROA	-0.481	-6.390***
NPM	-2.019	-8.598***
ROE	-1.237	-5.379***
DER	-5.070***	----
CR	-0.834	-5.443***
FIN	-1.527	-7.850***
QR	-4.865***	----
COEXP	-1.794	-6.661***
BDS	-1.955	-7.867***

Note: *** Represent the 1% level of significance.

Given the existence of cross-sectional dependence amongst firms, using the first-generation unit root test could yield spurious results. Therefore, the researchers used the second-generation unit root, namely Pesaran Cross-sectional Im, Pesaran, and Shin (CIPS) unit root test, to determine the order of integration among the series. Table 3 presents the results of the CIPS unit root tests.

The findings indicate that all the variables are stationary at the first difference, except for the debt-to-equity ratio and quick ratio, which exhibit stationary at the level. This finding implies that there is a different order of integration among the variables, making use of the PARDL technique appropriate.

Subsequently, the study examined the co-integration relationship among the variables using the Westerlund [46] panel co-integration test. Since there is a presence of cross-sectional dependence and slope heterogeneity in the dataset, the test includes four statistics: two groups mean tests (G_t, G_a) and two panel mean tests (P_t, G_a). Table 4 displays the findings of the Westerlund panel co-integration test for the three models, using ROA, NPM and ROE as dependent variables.

The outcomes indicate that the null hypothesis of no co-integration is rejected among the variables, implying that a co-integration relationship exists among the variables.

Table 4.
The results of Westerlund [46] panel co-integration test.

Statistics	1	2	3
G_t	-4.016***	-4.559***	-3.824**
G_a	-9.511***	-8.216***	-7.412***
P_t	-5.248***	-6.516***	-4.801***
P_a	-10.872***	-11.431***	-12.107***

Note: G_t and G_a represent the group mean tests. P_t and P_a denote panel mean tests. *** and ** represent the 1% and 5% level of significance respectively.

Accordingly, the PARDL technique is used to determine the long- and short-run relationships between variables. Table 5 presents the findings of the long- and short-run results, where three models with ROA, NPM, and ROE as separate dependent variables are included. To ensure the efficiency of the PMG and MG estimators, the study employs the Hausman and Taylor [47] test using the panel ARDL approach. Based on the results in Table 5, the PMG estimator is deemed an efficient estimator as the null hypothesis is not rejected.

The long-run results show that the estimated coefficients of the debt-to-equity ratio are negative and significant in the models, providing evidence that a higher debt-to-equity ratio increases the level of corporate financial risk, thereby undermining the sustainability performance of the selected firms. This finding is consistent with the studies conducted by Elsayed, et al. [4]; Demmou, et al. [10]; Khidmat [48], and Mahardhika and Marbun [49] which reported similar findings. Conversely, the coefficients of the current ratio show a positive and significant relationship. This indicates that an increase in a company's ability to meet operational goals mitigates solvency risks, thereby enhancing profitability and sustainability. Similarly, the coefficient of the quick ratio, as a proxy for liquidity, is positive and significant, indicating an increase in companies' ability to fulfil their short-term obligations reduces financial risks such as solvency risks and liquidity risks, thereby improving sustainability.

The long-run coefficients of financial cost are negative and significant in columns (1) and (3), implying that an increase in firms' financial cost amplifies corporate risk, thus affecting the sustainability of the selected firms. Moreover, the long-run coefficients of COVID-19 expenses are negative and significant in all the estimated models, indicating that rising COVID-19 expenses exacerbate corporate risk and contract profitability of firms, leading to firm distress and failure in the long run [22]. Similarly, the coefficients of board size are positive and significant, suggesting that an increase in board size or management involvement reduces governance distress and risk, thereby improving the sustainability and growth of the selected firms. These findings align with the results of Elsayed, et al. [4]; Khatib and Nour [18]; Moscu [50]; Topal and Dogan [51] and Pratheepkanth, et al. [52], who reported similar findings in their investigations.

Further, the short-run results indicate that the coefficients of the debt-to-equity ratio, financial cost, and COVID-19 expenses are all negative and statistically significant. This implies that companies will experience a negative impact from the pandemic in the short term and in the long run if control measures are not implemented. Conversely, the estimated short-run results of the current ratio, quick ratio, and board size exert significant and positive effects on performance and sustainability indicators. The estimated error correction term (ECT) is negative and significant, suggesting that the disequilibrium from the long-run equilibrium is corrected at 0.427, 0.550, and 0.693, respectively.

Table 5.
PARDL results.

Variable	1	2	3
C	2.857(0.025)**	-0.505(0.764)	1.211(0.223)
DER	-0.315(0.003)***	-0.338(0.016)***	-0.540(0.000)***
CR	0.224(0.000)***	0.266(0.008)***	0.181(0.021)**
FIN	-0.102(0.000)***	-0.770(0.138)	-0.960(0.000)***
QR	0.765(0.034)**	0.159(0.000)***	0.530(0.000)***
COEXP	-0.163(0.000)***	-0.493(0.000)***	-0.148(0.000)***
BDS	0.940(0.019)***	0.654(0.074)*	0.245(0.000)***
Short-run			
ΔDER	-0.572(0.000)***	-0.110(0.057)**	-0.260(0.000)***
ΔCR	0.195(0.000)***	0.190(0.000)***	0.564(0.000)***
ΔFIN	-0.216(0.000)***	-0.150(0.023)**	-0.125(0.031)**
ΔQR	0.327(0.000)***	0.338(0.000)***	0.254(0.000)***
$\Delta COEXP$	-0.698(0.000)***	-0.674(0.000)***	-0.115(0.000)***
ΔBDS	0.809(0.000)***	0.212(0.000)***	0.293(0.000)***
ECT	-0.427(0.000)***	-0.550(0.000)	-0.480(0.000)***
Hausman test	0.520(0.146)	0.156(0.420)	0.209(0.114)
Obs.	480	480	480
Log likelihood	-243.718	-490.520	-444.043

Note: ***,** and * indicate significance levels for 1%, 5% and 10% respectively. The values in parenthesis are p-values respectively.

5.1. Study Implication

The study aimed to examine the extent to which good corporate governance mediates the risk of corporate distress and corporate failures before, during and after the pandemic. The main findings revealed that corporate governance mediated the risk of corporate distress to a certain level, referred to as the trade-off point, where many companies began to experience distress due to the severe impact of the pandemic. This finding aligns with Chen, et al. [7] and Caratas, et al. [6], who supported the role of corporate governance in mediating the risk of corporate distress during the pandemic. The data gathered from the annual reports of the selected companies strongly support this claim.

We tested the short-run and long-run impact of the pandemic on corporate governance performance and sustainability using the PARDL technique. The results from both short-run and long-run effects were similar, revealing that the estimated coefficient of debt-to-equity ratio, finance cost, and COVID-19 related costs were negative but significant in the models. This suggests that companies experienced an abnormal rise in debts and other costs, leading to outflows, production stagnation, and revenue decline during the short period of the pandemic, which adversely affected overall performance. For instance, the increase in debt resulted in higher financing costs for companies from the banks, increasing their vulnerability and exposure to default risk, liquidity risk, and other financial risks. Consequently, many companies faced distress in the short run, ultimately leading to failure in the long run [14].

This also implies that the negative impact on companies would have a long-term effect on their returns, as indicated by the two models' results linking the debt-to-equity ratio to return on assets (ROA), reported profit (net present value), and return on equity for shareholders. As a result, the value of the shareholders or investors was eroded. The findings reveal that the increase in debt or change in capital structure during this period exposed many companies to risks, as debt financing carries more risks than equity financing. Hence, this finding suggests a key reason behind the increased corporate distress and failure all over the world during this period. It emphasizes the crucial role of good corporate governance in controlling and mitigating the risks of corporate distress and failure, which is consistent with the findings of other authors [4, 18, 29, 39, 49, 53].

Additionally, similar results obtained from both short-run and long-run models send a serious negative signal to companies around the world, indicating the negative impact may persist longer than expected, impeding a complete recovery. This suggests that companies may continue to experience corporate distress, potentially leading to more failures around the world in the years to come [22]. Hence, company managers should be careful in their risk control mechanisms and decision-making process to facilitate the recovery processes.

The increase in COVID-19-related expenses for the selected companies had a detrimental effect on their governance performance during the pandemic, depriving them of the opportunity to allocate funds to other investment and financing opportunities. This finding is similar to the findings of other studies [9, 54, 55]. Consequently, the performance of these companies was reduced, negatively affecting their corporate sustainability and hindering the achievement of good governance performance.

Conversely, the coefficients of current ratio, quick ratio, and board size obtained from both short-run and long-run effects exhibit positive and significant results, suggesting the selected companies had the ability to meet both short-run and long-run obligations, which is very important [27]. Companies with a strong current ratio, quick ratio, and board size are less likely to experience financial distress, thus ensuring the achievement of operational goals and improved profitability, leading to a robust sustainability profile. On the other hand, reductions in the current ratio and quick ratio may be detrimental to companies' sustainability and performance. Such reductions may contribute to financial risk and could be perceived as poor governance by stakeholders.

6. Conclusion

This study empirically examines the role of corporate governance in mediating and managing the risk of corporate distresses and failures before, during, and after the COVID-19 pandemic. The objective is achieved using the PARDL technique to examine the short-run and long-run effects of the pandemic on corporate sustainability. The findings reveal that the coefficient of board size, as represented by corporate governance, has a very strong influence in mediating the risk of corporate distress and failure during the pandemic period, up to a certain level until the impact of the pandemic becomes overwhelming for companies' production, sales, and overall operational performance. This is attributed to systematic risks associated with environmental and macro-economic variables, which affect companies' governance and management controls through government policies and interventions to combat the pandemic.

Moreover, the study identifies that the risk of corporate distress and failure was particularly severe during the pandemic, especially for SMEs. It is observed that corporate distress was more prevalent than failure, and many of the companies that failed during this period were already struggling to survive before the onset of the pandemic. Additionally, considering that a company's short-run performance can have long-term consequences and is highly influenced by internal factors such as corporate governance, internal policies, external policies (such as government restrictions during the pandemic), and business strategies, it means that governance outcomes in the short run dictate the long-run outcomes. Hence, good corporate governance plays a crucial role in mediating the risk of corporate distress and corporate failures before, during, and after the pandemic.

This study provides valuable insight for stakeholders such as investors, shareholders, managers, government officials, policymakers, lending institutions, bankers, and other stakeholders. It recommends the implementation of robust IT governance and a strong risk control framework to avert and mitigate potential similar pandemics and their adverse consequences. It emphasizes that boards of directors and management teams should introduce strategies that enhance good governance, improve risk control mechanisms, and enhance overall company performance while reducing corporate distresses and failure on a global scale.

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