

The role of good corporate governance and transformative big data analysis in improving company financial performance

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ABSTRACT

The financial performance of a company reflects its ability to run and manage its operations while strictly adhering to prudent financial administration principles. Good financial performance often mirrors the implementation of Good Corporate Governance (GCG) principles in a company. The application of GCG provides a solid foundation for a company to conduct its operations transparently, ethically, and accountability. The objective of this research is to analyze the implementation of GCG and the capabilities of big data analysis on financial performance, as well as to examine the mediating role of big data analysis in the relationship between GCG and financial performance. The research method employed is quantitative, and data were obtained through a survey questionnaire distributed using a Likert Scale of 1-5. Random sampling was employed to select 258 samples from manufacturing companies that are State-Owned Enterprises (SOE/BUMN) listed on the Indonesia Stock Exchange (ISE/BEI). Data collection took place from March 2023 to May 2023. Respondents included staff and managers from these BUMN companies. The collected data were analyzed using Structural Equation Modeling (SEM) with SmartPLS software. The research findings indicate that GCG has a positive and significant influence on big data analysis, providing a foundation for digital transformation. Furthermore, GCG also contributes positively and significantly to the financial performance of the company. Big data analysis has proven to have a positive impact on financial performance, indicating the role of technology in optimizing financial results. Another interesting finding is that big data analysis mediates the relationship between GCG and financial performance, highlighting the crucial role of technology in connecting good corporate governance practices with optimal financial outcomes.

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1. Introduction

The achievement level of a company is closely related to the substantial impact of the financial performance it generates. The financial performance of a company reflects its ability to carry out and manage its operations while strictly adhering to prudent financial administration principles (Cazenave & Morales, 2021). Analysis and evaluation of a company's financial aspects are key to understanding how far the company can optimize resources and achieve its business objectives. Financial performance encompasses not only profit and loss but also various stages such as financial statement analysis, cash management, investment, and financial risk management (El Khatib et al., 2020; Nicolae et al., 2021). Thus, companies can assess financial health, identify growth potential, and make strategic decisions. Mukhtaruddin et al. (2019) state that good financial performance often reflects the implementation of Good Corporate Governance (GCG) principles in a company. Good Corporate Governance is a framework that includes a set of principles, practices, and procedures designed to manage and oversee a company. The application of GCG provides a solid foundation for a company to conduct its operations transparently, ethically, and accountability.

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One of the main aspects of GCG that directly impacts financial performance is transparency. Companies that effectively implement GCG tend to provide clear and easily understandable information regarding policies, strategies, risks, and financial performance to stakeholders (Sianipar & Wiksuana, 2019; Ekasari & Noegroho, 2020). This not only builds trust but also allows investors and other stakeholders to make better decisions regarding investment or engagement with the company. Additionally, the accountability principle in GCG helps ensure that company leaders are effectively responsible for financial performance. This includes setting clear goals, wisely managing risks, and making decisions that align with the company's long-term interests (Rahayu & Handayani, 2019; Dasuki & Lestari, 2019). Hermanto et al. (2021) state that through a good GCG system, a company can create an environment where management and the board of directors hold each other accountable. High business ethics is one of the GCG principles that can also enhance the long-term financial performance of a company. Companies that uphold high ethical values have a good reputation in the eyes of consumers and the public, which, in turn, can support business growth and minimize legal or reputational risks that could affect financial performance (Irawati et al., 2019; Gunadi et al., 2020). Furthermore, in an era where data volume continues to exponentially increase, and business complexity is growing, decision-makers face new challenges that require innovative solutions. Big data analysis plays a key role by providing solutions to address complexity and harness significant potential within data (Iqbal et al., 2020; Mikalef et al., 2021). Big data analysis involves the collection, storage, and analysis of data on an extensive scale, encompassing both structured and unstructured data (Ren et al., 2019). By utilizing advanced technology and algorithms, organizations can explore patterns, trends, and insights that may not be identifiable through conventional analytical methods. This enables decision-makers to make more informed decisions and better understand market dynamics, consumer behavior, and other factors influencing business. Bag et al. (2020) state that big data analysis also provides the ability to enhance operational efficiency and respond rapidly to changes in the business environment. With real-time data analysis, organizations can identify potential issues or opportunities more quickly, allowing them to take timely action. This may include adjusting marketing strategies, altering supply chains, or optimizing internal processes (Dubey et al., 2019; Kamble & Gunasekaran, 2020).

The importance of big data analysis is also reflected in the development of concepts such as business intelligence, machine learning, and artificial intelligence. These tools can help automate data analysis processes, improve prediction accuracy, and provide deep insights to organizations (Bag et al., 2021). Previous studies like Irawati et al. (2019) and Hermanto et al. (2021) have stated that the implementation of GCG has a positive impact on company performance. Meanwhile, Bag et al. (2020) analyzed the capabilities of big data analysis, concluding that big data analysis capabilities generate high-quality financial reports or audits for stakeholders. However, there is still a gap in understanding the relationship between the implementation of GCG and the capabilities of big data analysis, especially when jointly analyzed in influencing the financial performance of State-Owned Enterprises (SOE/BUMN). Therefore, this research aims to comprehensively analyze the interaction between the implementation of GCG and the capabilities of big data analysis on the financial performance of State-Owned Enterprises (SOE/BUMN) in the manufacturing sector listed on the Indonesia Stock Exchange (ISE/BEI). Additionally, this study also analyzes the mediating role of big data analysis in the relationship between GCG and financial performance.

2. Literature Review

Good Corporate Governance (GCG) is a framework and set of principles, practices, and procedures used to manage and oversee a company. The main goal of GCG is to ensure that the company is run ethically, transparently, and accountably, aiming for long-term sustainability, and adding value to all stakeholders (Dasuki & Lestari, 2019; Gunadi et al., 2020). As a system, GCG involves active participation from the board of directors and company management in making strategic decisions and running the company's operations. Hasanudin (2023) emphasizes that GCG is not just a regulatory obligation but also a key element in creating a healthy and sustainable corporate culture. The transparency principle emphasized in GCG ensures that data can be easily accessed and used, creating conditions that support the effective integration of big data analysis (Rahayu & Handayani, 2019; Seete, 2022; Napitupulu, 2023). Additionally, order and discipline in data management, which are integral parts of GCG, enhance the quality of data, forming the foundation for big data analysis. Ekasari & Noegroho (2020) highlight data security as a GCG aspect, which is a key factor in supporting the sustainability of big data analysis by protecting sensitive information. The business ethics principle in GCG guides the ethical use of data, preserving privacy rights, and ensuring compliance with ethical norms (Mukhtaruddin et al., 2019). The responsibility and risk management emphasized in GCG help companies understand and manage risks related to the use and interpretation of data. GCG forms a solid foundation for efficient and ethical data management, enhancing the ability of big data analysis to provide valuable insights for the company (Pottag, 2022; Wendry et al., 2023).

The implementation of GCG has also been recognized as a crucial factor in creating good and sustainable financial performance. One of the main aspects of GCG contributing to a company's financial performance is transparency (Sahusilawane, 2020). By providing accurate and detailed financial reports, companies build trust among stakeholders, which, in turn, can increase access to capital, strengthen reputation, and support company growth. Moreover, the accountability principle in GCG helps ensure that company leaders are responsible for policies, strategies, and company performance (Kalangi & Tewu, 2022; Karunia et al., 2023). By ensuring accountability, GCG helps avoid irresponsible management actions that could harm the financial health of the company. This creates an environment where leaders must make decisions considering the long-term impact on financial performance and the company's reputation (Juanaristo & Astika, 2022; Pratama et al., 2023). Companies operating with high ethics can create an environment that supports long-term sustainability and growth. GCG policies that

prioritize integrity and corporate social responsibility can attract investments, commit customers, and foster good relationships with business partners (Iswahyudi et al., 2023). Furthermore, leveraging big data analysis, companies can extract profound insights from various data sources. Big data analysis enables companies to identify growth opportunities, optimize marketing strategies, and respond quickly to market changes (Bag et al., 2020). The implementation of big data analysis can also assist companies in identifying and managing financial risks. By monitoring data in real-time, companies can proactively identify potential risks, whether related to market fluctuations, regulatory changes, or other internal factors (Dubey et al., 2019; Awan et al., 2022). Thus, companies can design effective risk mitigation strategies to protect the financial performance of the company. By harnessing the power of big data analysis, companies can gain a competitive advantage, improve operational efficiency, and achieve better financial performance (Ren et al., 2019; Kristoffersen et al., 2021). The ability to make accurate and real-time data-driven decisions provides companies with better responsiveness to the rapidly changing dynamics of the market, helping create long-term value and sustainability in an increasingly complex business environment. Therefore, the hypotheses in this research are concluded as follows:

Hypothesis 1: *Good corporate governance has a positive influence on big data analysis.*

Hypothesis 2: *Good corporate governance has a positive influence on the company's financial performance.*

Hypothesis 3: *Big data has a positive influence on the company's financial performance.*

Hypothesis 4: *Big data analysis can mediate the relationship between good corporate governance and company financial performance.*

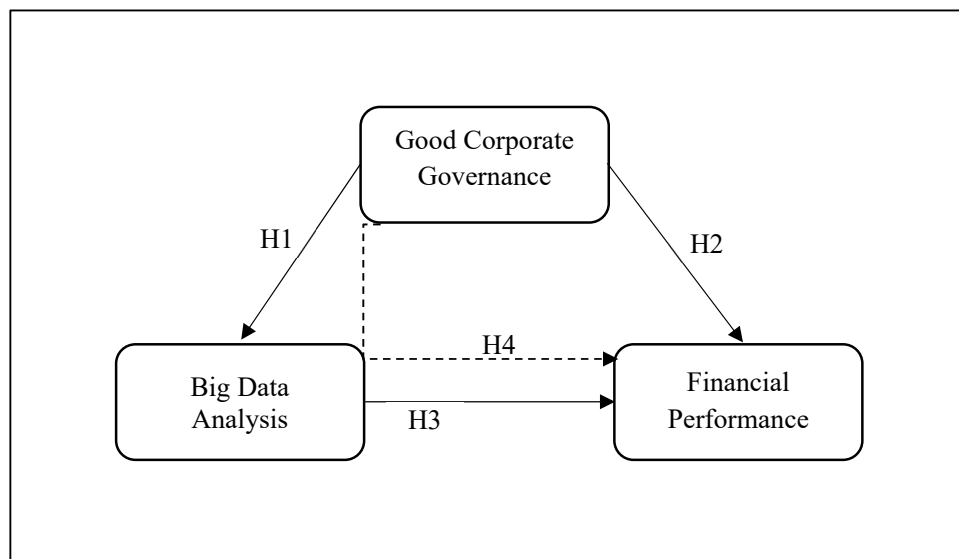


Fig. 1. Theoretical Framework

3. Research Methods

The research method employed in this study is a quantitative approach. Data were obtained through a survey questionnaire distributed using a Likert Scale ranging from 1 – 5 (disagree – strongly agree) to measure respondents' responses to the questionnaire. The sampling technique used in this research is random sampling. The respondents of this study were staff and managers of state-owned manufacturing companies (BUMN) listed on the Indonesia Stock Exchange (BEI). Data collection took place from March 2023 to May 2023. A total of 350 questionnaires were distributed to respondents, but 74 respondents did not return the questionnaires. Therefore, the total number of collected questionnaires was 276, indicating a questionnaire return rate of 78.86%. However, during the questionnaire selection phase, 18 questionnaires were found to be incomplete. Thus, the number of questionnaires considered as samples for this research analysis is 258. The collected data were further analyzed using Structural Equation Modeling (SEM) analysis with SmartPLS software. SEM analysis allows for assessing the significance level of the relationships between independent and dependent variables.

4. Results and Discussion

This research utilizes three main variables: the good corporate governance variable, which serves as the independent variable, the big data analysis variable, functioning as both an independent and mediating variable, and the financial performance variable, which acts as the dependent variable. The number of indicators used to measure the good corporate governance and financial performance variables is 4 (four), while the big data analysis variable is measured using 3 (three) indicators. In the initial analysis stage, the standard loading factor test is conducted. This test aims to measure the reliability of items or questions used as indicators in measuring latent variables. In the standard loading factor test, the acceptance level for an item to prove

its reliability in measuring the latent variable is required to have a value > 0.6 . The analysis results are presented in Figure 2 and in detail in Table 1 below.

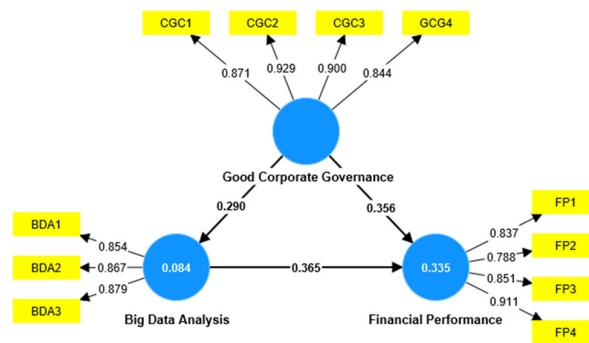


Fig. 2. Analysis Results

Table 1
Std. Loading Factor

Variable	Good Corporate Governance	Big Data Analysis	Financial Performance
CGC1	0.871		
CGC2	0.929		
CGC3	0.900		
GCG4	0.844		
BDA1		0.854	
BDA2		0.867	
BDA3		0.879	
FP1			0.837
FP2			0.788
FP3			0.851
FP4			0.911

Table 1 above shows that all four indicators used to measure the good corporate governance variable have values greater than 0.6. The standard loading factor values obtained for the CGC1 indicator are 0.871, CGC2 is 0.929, CGC3 is 0.900, and GCG4 is 0.844. The three indicators used to measure the big data analysis variable have standard loading factor values of 0.854 for BDA1, 0.867 for BDA2, and 0.879 for BDA3. As for the indicators measuring the financial performance variable, the four indicators used have standard loading factor values including FP1 at 0.837, FP2 at 0.788, FP3 at 0.851, and FP4 at 0.911. From these results, it can be concluded that all indicators in measuring the latent variables can be used since the overall standard loading factor values for all indicators are above 0.6. Furthermore, there are two crucial methods in data management, namely reliability testing and validity testing. Reliability testing is a statistical step aimed at measuring the extent to which a measurement instrument shows consistency or reliability. Reliability testing is essential to ensure that the instrument can produce consistent data. The goal is to verify that the measurement instrument applied in this research can provide stable and reliable results. Thus, the obtained data can be considered accurate and well-reflecting latent variables. The reliability of the latent variable measurement instrument will be assessed through the values of Cronbach's Alpha or Composite Reliability. If the value of Cronbach's Alpha or Composite Reliability exceeds 0.7, it can be concluded that the instrument is reliable and provides consistent results. Meanwhile, validity testing is intended to evaluate the extent to which the measurement instrument used can accurately and consistently measure latent variables. The purpose of validity testing is to ensure that the measurement instrument used in this research can produce data that accurately reflects the intended concept. The accuracy and consistency of the measurement instrument can be assessed through the Average Variance Extracted (AVE) values. If the AVE value exceeds 0.5, it can be concluded that the instrument is accurate and consistent in measuring latent variables. With strong reliability and validity testing in this data analysis, this research provides confidence that the results are reliable and can accurately depict the measured concept. The holistic approach in this methodology reflects high integrity in achieving the research objectives with optimal levels of confidence and precision.

Table 2
Reliability and Validity Test

Variable	Cronbach's alpha	Composite reliability (rho_a)	Average variance extracted (AVE)
Good Corporate Governance	0.909	0.914	0.786
Big Data Analysis	0.835	0.837	0.751
Financial Performance	0.870	0.898	0.719

Based on the reliability analysis results presented in Table 2, the good corporate governance variable obtained a Cronbach's Alpha value of 0.909 and a Composite Reliability of 0.914. These figures surpass the minimum threshold of 0.7, indicating that the latent variable measurement instrument has a high level of consistency and reliability. In other words, the items within the instrument can consistently be relied upon to measure the concept of good corporate governance. For the big data analysis variable, Cronbach's Alpha was found to be 0.835, and Composite Reliability was 0.837. Both of these values also exceed the 0.7 threshold, indicating that the measurement instrument for this variable has a high level of consistency and reliability. Thus, the items included in the instrument can consistently be relied upon to measure the concept of big data analysis. Meanwhile, for the financial performance variable, Cronbach's Alpha was found to be 0.870, and Composite Reliability was 0.898. These values also surpass the minimum threshold of 0.7, indicating that the measurement instrument for this variable has a high level of consistency and reliability. Thus, the items within the instrument can consistently be relied upon to measure the concept of financial performance.

Next, the results of the validity evaluation show that the Average Variance Extracted (AVE) values for the good corporate governance variable reach 0.786. This figure exceeds the threshold of 0.5, indicating that the measurement instrument applied to the good corporate governance variable in this research can be relied upon and provides consistent results. Moving on to the big data analysis variable, an AVE value of 0.751 was obtained, also surpassing the 0.5 threshold. These results indicate that the measurement instrument for the big data analysis variable can also be considered accurate and provides consistent results. Similarly, the financial performance variable obtained an AVE value of 0.719, surpassing the 0.5 threshold. This indicates that the measurement instrument for the financial performance variable is also accurate and provides consistent results.

The hypothesis testing process is a crucial stage in this research, allowing for the empirical testing and conclusion of the validity or rejection of assumptions proposed in the research hypotheses. Hypothesis testing in this research focuses on evaluating the impact of good corporate governance on big data analysis and financial performance, the influence of big data analysis on financial performance, and the mediating role of big data analysis in the relationship between good corporate governance and financial performance. To test these hypotheses, the significance threshold for the P-value is set at 0.05. If the P-value is less than 0.05, it can be interpreted that the hypothesis has a significant effect and can be accepted. Conversely, if the P-value is greater than 0.05, it indicates insignificance and leads to the rejection of the hypothesis.

Table 3
Hypothesis Testing

Hypothesis	T statistics (O/STDEV)	P values
Good Corporate Governance → Big Data Analysis	3.173	0.002
Good Corporate Governance → Financial Performance	4.307	0.000
Big Data Analysis → Financial Performance	3.281	0.001
Good Corporate Governance → Big Data Analysis → Financial Performance	2.211	0.029

The results of hypothesis testing indicate that in the first hypothesis, the influence of good corporate governance on big data analysis has a P-value of 0.002. This value is less than 0.05, meaning that good corporate governance has a positive and significant influence on big data analysis. Additionally, the P-value obtained in the second hypothesis, which states the influence of good corporate governance on financial performance, is 0.000, also less than 0.05. This implies that good corporate governance also has a positive and significant influence on financial performance. In the third hypothesis, which states that big data analysis influences financial performance, it is proven to have a significant impact with a P-value of 0.001. Meanwhile, in the fourth hypothesis, big data analysis mediating the relationship between good corporate governance and financial performance obtains a P-value of 0.029. This indicates that big data analysis can effectively mediate the relationship between these variables.

The findings of this research show that good corporate governance has a positive and significant impact on big data analysis. This indicates that the effective implementation of GCG principles can encourage the use and utilization of big data analysis within a company. In line with Dasuki and Lestari (2019), good GCG creates an environment that supports transparency, accountability, and business ethics, key factors that facilitate the adoption of big data technology. These findings also indicate that good corporate governance also has a positive and significant impact on the financial performance of state-owned manufacturing companies. This emphasizes the importance of good corporate governance in creating value and contributing positively to financial outcomes. Supporting Juanaristo and Astika (2022), strong GCG implementation can increase stakeholder trust, support access to resources, and form a solid foundation for long-term growth. Furthermore, the finding that big data analysis influences financial performance confirms the strategic role of this technology in improving financial outcomes. In line with Bag et al. (2020), big data analysis allows companies to optimize business processes, make better data-driven decisions, and identify growth opportunities that can have a positive impact on financial performance. The finding that big data analysis mediates the relationship between good corporate governance and financial performance highlights how technology integration can act as a bridge between good corporate governance practices and excellent financial outcomes. Big data analysis not only serves as a performance metric but also serves as a means to improve operational efficiency and support the achievement of the company's financial goals.

5. Conclusion

This research investigates the role of Good Corporate Governance (GCG) and the transformation of big data analysis in enhancing the financial performance of state-owned manufacturing companies listed on the Indonesia Stock Exchange (BEI). The research results show significant findings and provide in-depth understanding of the relationship between these aspects. GCG has a positive and significant impact on the adoption of big data analysis in companies. The implementation of GCG principles creates an environment that supports the utilization of big data technology, emphasizing the importance of good governance as a catalyst for digital transformation. GCG also plays a crucial role in improving the financial performance of companies. Good governance practices create a strong foundation for achieving positive financial results, reflecting the positive impact of GCG on the company's value. Furthermore, the findings indicate that big data analysis has a positive influence on financial performance, reinforcing the role of technology in achieving optimal financial outcomes. This study affirms that big data analysis functions as a mediation that connects the influence of GCG with financial performance, demonstrating that technology can be a crucial link between good corporate governance practices and excellent financial results. The effective integration of GCG with the utilization of big data analysis can be a robust strategy to enhance the competitiveness and sustainability of state-owned manufacturing companies in Indonesia. This provides a foundation for stakeholders and decision-makers to continue prioritizing the implementation of GCG and investing in information technology to achieve sustainable growth and optimal financial results.

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