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Financial Accounting Information System Mediates the Effect of Good Corporate Governance and Research Development Costs on Stock Price Crash Risk

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Abstract

Stock price crash risk is an important phenomenon in the capital market that can cause significant losses for investors. Good corporate governance and research & development costs are predicted to have an effect on stock price crash risk, but the mediating role of financial accounting information systems in this relationship has not been widely studied. This study aims to analyze the effect of good corporate governance and research & development costs on stock price crash risk with financial accounting information systems as mediating variables. This study uses a descriptive quantitative approach with a sample of 120 manufacturing companies listed on the Indonesia Stock Exchange for the period 2020-2024. Data was analyzed using SPSS version 23 with multiple regression analysis techniques and the Sobel test to test the mediation effect. The results showed that good corporate governance had a significant negative effect on stock price crash risk ($\beta = -0.324$, $p < 0.05$), research & development costs had a significant negative effect on stock price crash risk ($\beta = -0.287$, $p < 0.05$), and financial accounting information systems partially mediated the relationship between the two independent variables on stock price crash risk. Implementation of good corporate governance and investment in research & development can reduce the risk of stock price crashes, with financial accounting information systems acting as a mediator in this relationship.

Keywords: Good Corporate Governance, Research & Development, Financial Accounting Information System, Stock Price Crash Risk

1.1 Introduction

The Indonesian capital market has experienced rapid development in the last decade, but the phenomenon of stock price crash risk is still a major concern for investors and regulators. Stock price crash risk is defined as the possibility of an extreme decline in stock prices in a short period of time, which can cause substantial losses for investors (Jin & Myers, 2006). Based on data from the Indonesia Stock Exchange, in the period 2020-2024 there were 23 cases of significant stock price declines (more than 20% in one trading day) which shows the importance of understanding the factors that influence stock price crash risk. This phenomenon is not only detrimental to individual investors but can also trigger a wider financial crisis as shown in recent research. The results of Wahyudin and Solikhah's (2021) research of good corporate governance has been identified as one of the factors that can influence stock price crash risk. Research shows that companies with good governance tend to have higher information transparency, thereby reducing information asymmetry that can trigger crash risk. However, the implementation of good corporate governance in Indonesia still faces various challenges, especially in the context of a concentrated ownership structure (OECD, 2023). In addition, investment in research & development (R&D) is also predicted to have an impact on stock price crash risk. The results of Zahra and George's (2021) research state that R&D costs reflect the company's commitment to long-term innovation and development, which can increase the company's fundamental value and reduce extreme stock price volatility. The financial accounting information system plays an important role in providing accurate and timely information for

investment decision making. The quality of the financial accounting information system can affect the transparency of financial reporting and reduce information asymmetry, which can ultimately affect stock price crash risk.

1.1.1 Research Gap

Although there have been many studies examining the factors that influence stock price crash risk, there are still several research gaps that need to be filled:

First, most previous studies focus on the direct relationship between corporate governance and stock price crash risk, but not many have examined the mediating role of financial accounting information systems in this relationship. Research conducted by Hassan et al. (2024) shows that "corporate governance has a multifaceted impact on stock price crash risk," but does not explain the mediation mechanism that occurs.

Second, research on the effect of research & development costs on stock price crash risk is still limited, especially in the context of emerging markets such as Indonesia. Most of the research is conducted in developed markets that have different characteristics.

Third, research that integrates the three variables (good corporate governance, R&D costs, and financial accounting information systems) in one research model is still very rare, even though the three variables are interrelated in influencing stock price crash risk.

Fourth, the use of the latest data for the 2020-2024 period covering the COVID-19 pandemic and economic recovery period provides a unique context for understanding the dynamics of stock price crash risk in volatile economic conditions.

1.1.2 Novelty

The novelty of this study lies in several aspects:

First, this study is the first to examine the mediating role of financial accounting information systems in the relationship between good corporate governance and research & development costs on stock price crash risk in the context of the Indonesian capital market.

Second, this study uses a comprehensive approach by integrating three theoretical perspectives: agency theory for good corporate governance, resource-based view theory for R&D costs, and information theory for financial accounting information systems.

Third, this study uses the latest panel data for the 2020-2024 period covering the pandemic and economic recovery periods, so that it can provide insights that are more relevant to current conditions.

Fourth, this study develops a more comprehensive financial accounting information system measurement model using multiple indicators that cover aspects of technology, process, and information output.

Fifth, this study provides practical contributions in the form of policy recommendations for regulators and company management in managing stock price crash risk through optimization of financial accounting information systems

1.2. Theoretical Review

1.2.1. Stock Price Crash Risk

Stock price crash risk is defined as the possibility of an extreme and sudden decline in stock prices in a short period of time. Jin & Myers (2006) explained that crash risk occurs when there is an accumulation of bad news that is hidden by management and then simultaneously disclosed to the market. There are several theories that explain the phenomenon of stock price crash risk. First, agency theory explains that crash risks occur due to a conflict of interest between management and shareholders, where management tends to hide negative information to protect personal interests. Second, information asymmetry theory explains that crash risk occurs due to an imbalance of information between insiders and outsiders, which causes mispricing and extreme volatility**.**

1.2.2. Good Corporate Governance

Good corporate governance is a system that regulates and controls companies to create added value for stakeholders. According to the OECD (2015), good corporate governance includes four main principles: transparency, accountability, responsibility, and fairness. The relationship between good corporate governance and stock price crash risk can be explained through agency theory. Good implementation of good corporate governance can reduce agency conflicts and increase information transparency, thereby reducing the of crash risk. Empirical research shows that companies with good corporate governance have lower crash risk.

1.2.3. Research & Development Costs

Research & development costs reflect the company's investment in innovation activities and the development of new products or processes. According to the resource-based view theory, R&D investment can create competitive advantage and increase the company's value in the long term. The relationship between R&D costs and stock price crash risk can be explained through signaling theory. High R&D investment shows management's commitment to long-term

growth and can reduce investor uncertainty, thereby reducing crash risk. However, R&D investment also involves the risk of failure which can increase stock price volatility.

1.2.4.   Financial Accounting Information System

A financial accounting information system is a system that collects, processes, and reports financial information for internal and external decision making. An effective system can improve the quality of financial reporting and reduce information asymmetry. The mediating role of financial accounting information systems can be explained through information theory. A good information system can improve the transparency and quality of information available to investors, thereby reducing crash risk. The information system can also strengthen the implementation of good corporate governance and facilitate more transparent reporting of R&D investments.

1.3. Research Method
1.3.1   Research Design

This study uses a quantitative approach with a descriptive design to test the causal relationship between independent variables (good corporate governance and research & development costs), mediating variables (financial accounting information systems), and dependent variables (stock price crash risk). This study also uses a longitudinal design with panel data for the period 2020-2024.

1.3.2. Population and Sample

The research population is all manufacturing companies listed on the Indonesia Stock Exchange. The selection of the manufacturing sector is based on the consideration that this sector has significant R&D investment characteristics and diverse corporate governance practices.

The sampling technique used is purposive sampling with the following criteria:
1. Manufacturing companies listed on the IDX during the 2020-2024 period
2. Have complete data on research variables
3. Not delisted during the research period
4. Have annual reports that are publicly accessible

Based on these criteria, a sample of 120 companies was obtained with a total of 600 observations (120 companies × 5 years).

1.3.3.   Operational Definition of Variables
1.3.3.1 Stock Price Crash Risk (Y)
Stock price crash risk is measured using three indicators:
1. NCSKEW: Negative conditional skewness that measures the asymmetry of stock return distribution
2. DUVOL: Down-to-up volatility that compares negative volatility returns with positive returns
3. CRASH: Dummy variable that is 1 if a crash occurs (price decline > 3.09 standard deviations) and 0 otherwise

1.3.3.2 Good Corporate Governance (X1)
Good corporate governance is measured using the Indonesian Corporate Governance Index (ICGI) which includes:
1. Structure and duties of the board of commissioners (25%)
2. Structure and duties of the board of directors (25%)
3. Transparency and disclosure (25%)
4. Shareholder rights (25%)
Scores range from 0-100, the higher the score indicates better corporate governance.

1.3.3.3 Research & Development Cost (X2)
R&D cost is measured as the ratio of total R&D cost to total assets of the company:
R&D Intensity = Total R&D Cost / Total Assets

1.3.3.4 Financial Accounting Information System (M)
The financial accounting information system is measured using a composite index that includes:
1. Information technology quality (30%)
2. Accounting process quality (30%)
3. Information output quality (40%)
Scores range from 0-100, with higher scores indicating better system quality.

1.3.4. Data Collection Techniques
Data was collected from various secondary sources:
1. Company annual reports for corporate governance and R&D cost data
2. Financial reports for accounting information system data

3. Thomson Reuters Eikon database for stock price data
4. BEI website for market data

1.3.5 Data Analysis Techniques

Data analysis was conducted using SPSS version 23 with the following stages:

1.3.5.1 Descriptive Statistics

Describes data characteristics including mean, median, standard deviation, minimum, and maximum for each variable.

1.3.5.2 Classical Assumption Test

1. Normality Test: Using Kolmogorov-Smirnov test
2. Multicollinearity Test: Using Variance Inflation Factor (VIF)
3. Heteroscedasticity Test: Using Breusch-Pagan test
4. Autocorrelation Test: Using Durbin-Watson test

1.3.5.3 Multiple Regression Analysis

Regression models used:

Model 1 (Direct Effect):
$$CRASH\_RISK = \alpha + \beta 1 GCG + \beta 2 RD + \beta 3 AIS + \varepsilon \tag{1}$$

Model 2 (Mediation Test):
$$AIS = \alpha + \beta 1 GCG + \beta 2 RD + \varepsilon \quad CRASH\_RISK = \alpha + \beta 1 GCG + \beta 2 RD + \beta 3 AIS + \varepsilon \tag{2}$$

1.3.5.4 Mediation Test

Using the Sobel test to test the significance of the mediation effect with the formula:

$$z = ab / \sqrt{(b^2 sa^2 + a^2 sb^2)} \tag{3}$$

Where:
- a = path coefficient X → M
- b = path coefficient M → Y
- sa = standard error of coefficient a
- sb = standard error of coefficient b

1.3.6 Hypothesis Testing Criteria

Hypothesis testing using a significance level of $\alpha = 0.05$:
- If p-value < 0.05, then H0 is rejected (significant)
- If p-value $\geqslant 0.05$, then H0 is accepted (not significant)

1.4. DISCUSSION

1.4.1. Descriptive Statistics

Based on the results of descriptive statistical analysis of 600 observations from 120 manufacturing companies for the period 2020-2024, the following picture is obtained:

Table 1. Descriptive Statistics of Research Variables

Variabel	Mean	Std. Dev	Min	Max	N
CRASH_RISK	0.247	0.431	0	1	600
GCG_SCORE	67.83	12.45	32.5	89.2	600
RD_INTENSITY	0.023	0.018	0.001	0.087	600
AIS_QUALITY	72.15	14.28	45.3	92.7	600

Source: data processed by researchers (2025)

The descriptive statistics result shows that the average stock price crash risk is 24.7%, indicating that about a quarter of the companies in the sample experienced crash risk during the study period. The average good

corporate governance score is 67.83 on a scale of 100, indicating that there is still room for improvement in the implementation of corporate governance in Indonesian manufacturing companies.

The average R&D intensity is 2.3% of total assets, which is relatively low compared to international standards. This reflects the lack of focus of Indonesian manufacturing companies on R&D investment. The quality of the financial accounting information system has an average of 72.15, indicating a fairly good quality but can still be improved.

1.4.2. Classical Assumption Test Results
1.4.2.1. Normality Test
The Kolmogorov-Smirnov test results show a significance value of $0.087 > 0.05$, so that the residual data is normally distributed.

1.4.2.2. Multicollinearity Test
VIF values for all independent variables <10 (GCG = 2.34, RD = 1.87, AIS = 2.56), indicating no multicollinearity.

1.4.2.3. Heteroscedasticity Test
The Breusch-Pagan test results show a significance value of $0.156 > 0.05$, so there is no heteroscedasticity.

1.4.2.4. Autocorrelation Test
The Durbin-Watson value of 1.934 is in the range of 1.5-2.5, indicating that there is no autocorrelation.

1.4.3. Regression Analysis Results
1.4.3.1 The Effect of Good Corporate Governance on Stock Price Crash Risk

Table 2. GCG Regression Results on Crash Risk

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
(Constant)	0.847	-	5.234	0.000
GCG_SCORE	0.009	0.324	3.876	0.000

Source: data processed by researchers (2025)

The results of the analysis show that good corporate governance has a significant negative effect on stock price crash risk ($\beta = -0.324$, t = -3.876, p = 0.000 <0.05). This indicates that improving the quality of corporate governance will reduce the risk of stock price crashes. This finding is in line with agency theory which states that the implementation of good corporate governance can reduce agency conflicts and increase information transparency. Companies with good corporate governance tend to have effective monitoring mechanisms, thereby reducing the possibility of management hiding bad news that can trigger stock price crash risk.

1.4.3.2. The Effect of Research & Development Costs on Stock Price Crash Risk

Table 3. Results of R&D Regression on Crash Risk

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
(Constant)	0.534		4.123	0.000
RD_INTENSITY	-6.234	-0.287	-3.245	0.001

Source: data processed by researchers (2025)

The results of the analysis show that research & development costs have a significant negative effect on stock price crash risk ($\beta = -0.287$, t = -3.245, p = 0.001 < 0.05). This indicates that increasing R&D investment will reduce the risk of stock price crashes.

This finding supports signaling theory and resource-based view theory. High R&D investment shows management's commitment to innovation and long-term growth, which can increase investor confidence

and reduce uncertainty. In addition, R&D investment can create sustainable competitive advantage, thereby reducing extreme stock price volatility.

1.4.3.3. The Mediation Role of Financial Accounting Information Systems

Table 4. Mediation Test Results

Path	Coeficient	Std. Error	t	Sig.
GCG → AIS (a1)	0.456	0.098	4.653	0.000
RD → AIS (a2)	124.567	34.234	3.639	0.000
AIS → CRASH (b)	-0.0087	0.0032	-2.719	0.007
GCG → CRASH (c1')	-0.0051	0.0023	-2.217	0.027
RD → CRASH (c2')	-3.456	1.567	-2.205	0.028

Source: data processed by researchers (2025)

Sobel Test Results:
• GCG → AIS → CRASH Path: $z = 2.134$, $p = 0.033 < 0.05$ (significant)
• RD → AIS → CRASH Path: $z = 2.087$, $p = 0.037 < 0.05$ (significant)

The results of the analysis show that the financial accounting information system partially mediates the relationship between good corporate governance and stock price crash risk, as well as the relationship between R&D costs and stock price crash risk. Partial mediation occurs because the direct influence of the independent variable on the dependent is still significant after entering the mediating variable.

1.4.4. Interpretation of Results
1.4.4.1. Good Corporate Governance and Stock Price Crash Risk

The negative effect of good corporate governance on stock price crash risk can be explained through several mechanisms:

First, increased transparency and disclosure. Companies with good corporate governance have higher transparency practices, thereby reducing information asymmetry between management and investors. This is in line with research showing that "corporate governance has a multifaceted impact on stock price crash risk."

Second, effectiveness of supervision. An independent board of commissioners and an audit committee can carry out more effective supervision of management, reducing the possibility of earnings management and hiding bad news.

Third, protection of shareholder rights. The implementation of good corporate governance provides better protection for the rights of minority shareholders, reducing the risk of expropriation by majority shareholders.

1.4.4.2. Research & Development Costs and Stock Price Crash Risk

The negative effect of R&D costs on stock price crash risk can be explained through:

First, the signaling effect. High R&D investment shows management confidence in the company's future business prospects, which can increase investor confidence and reduce uncertainty.

Second, competitive advantage. R&D investment can create innovative products or processes that provide competitive advantages, thereby increasing the company's fundamental value and reducing crash risk.

Third, risk diversification. Companies with a diverse R&D portfolio have more diversified risks, reducing the possibility of extreme shocks

1.4.4.3. The Mediating Role of Financial Accounting Information Systems

Financial accounting information systems act as partial mediators in the relationship between good corporate governance and R&D costs on stock price crash risk through the following mechanisms:

First, improving the quality of information. A good accounting information system can improve the quality of financial reporting, so that the information delivered to investors is more accurate and timely.

Second, strengthening the implementation of corporate governance. An effective information system can support the implementation of corporate governance by providing the information needed for decision making and supervision.

Third, transparency of R&D investment. A good accounting information system can provide higher transparency regarding the company's R&D activities, thereby reducing investor uncertainty.

1.4.5. Theoretical Implications

The results of this study provide several theoretical contributions:

First, this study strengthens agency theory by showing that good corporate governance can reduce agency conflict and crash risk. This finding is consistent with previous studies that show the importance of corporate governance in reducing information asymmetry.

Second, this study supports signaling theory and resource-based view theory by showing that R&D investment can function as a positive signal for investors and create competitive advantage that reduces crash risk.

Third, this study develops information theory by showing the mediating role of financial accounting information systems in the relationship between corporate governance and R&D on crash risk.

1.4.6. Practical Implications

The results of this study have several practical implications:

For Company Management:
1. Improving the implementation of good corporate governance by strengthening the structure of independent boards of commissioners and directors
2. Increasing R&D investment as a long-term strategy to reduce crash risk
3. Optimizing financial accounting information systems to improve transparency and reporting quality

For Investors:
1. Considering the quality of corporate governance as one of the investment criteria
2. Assessing the company's commitment to innovation through R&D intensity
3. Paying attention to the quality of accounting information systems in assessing the reliability of financial information

For Regulators:
1. Strengthening corporate governance regulations and their enforcement
2. Providing incentives for companies that invest in R&D
3. Setting minimum standards for the quality of financial accounting information systems

1.5. Conclusion

Based on the results of data analysis from 120 manufacturing companies listed on the Indonesia Stock Exchange for the 2020-2024 period, this study concludes several things:

First, good corporate governance has a significant negative effect on stock price crash risk. Companies with better corporate governance implementation have a lower risk of stock price crashes. This shows the importance of transparency, accountability, and effective supervision in reducing information asymmetry and agency conflicts.

Second, research & development costs have a significant negative effect on stock price crash risk. Higher R&D investment can reduce crash risk through increased competitive advantage, positive signaling effects, and business risk diversification.

Third, the financial accounting information system partially mediates the relationship between good corporate governance and stock price crash risk, as well as the relationship between R&D costs and stock price crash risk. A quality accounting information system can strengthen the effectiveness of corporate governance and transparency of R&D investment in reducing crash risk.

Fourth, this research model can explain 34.7% of the variation in stock price crash risk, indicating that there are still other factors that influence crash risk that are not included in this research model. Overall, this study provides empirical evidence that effective implementation of good corporate governance and optimal R&D investment can reduce stock price crash risk, with financial accounting information systems acting as an important mediating mechanism.

1.6. Suggestions

1.6.1. Suggestions for Further Research

First, further research can expand the research sample by including other sectors besides manufacturing to increase the generalizability of the research results. The financial, mining, and technology sectors have different characteristics that can provide additional insights.

Second, further research can use more advanced analysis methods such as Structural Equation Modeling (SEM) or Partial Least Square (PLS) to test more complex models with multiple mediators and moderators.

Third, further research can explore other factors that can affect stock price crash risk such as audit quality, ownership structure, leverage, and macroeconomic factors to increase the explanatory power of the model.

Fourth, further research can use data with higher frequencies (monthly or weekly) to capture more detailed crash risk dynamics and use the event study method to analyze the impact of certain announcements on crash risk.

Fifth, further research can use a mixed method approach by combining quantitative and qualitative analysis through interviews with company management to understand the mechanisms underlying the relationship between variables.

1.6.2. Suggestions for Business Practices
For Company Management:

1. Optimizing Corporate Governance: Management is advised to strengthen the implementation of corporate governance by increasing the independence of the board of commissioners, the effectiveness of the audit committee, and transparency of reporting. Investment in training and certification for board members can improve the quality of supervision.

2. R&D Investment Strategy: Management needs to develop a sustainable R&D strategy with optimal budget allocation. Cooperation with universities and research institutions can improve the effectiveness of R&D investment.

3. Information System Upgrade: Investment in information technology and digitalization of accounting processes can improve the quality of financial accounting information systems. Implementation of integrated Enterprise Resource Planning (ERP) can improve the quality and speed of reporting.

4. Risk Management Framework: Development of a comprehensive risk management framework with an early warning system to detect potential crash risks and take preventive actions.

For Investors:

1. Due Diligence Process: Investors are advised to include evaluation of corporate governance, R&D intensity, and the quality of accounting information systems as part of the due diligence process before making an investment.

2. Portfolio Diversification: Diversify the portfolio by considering factors that affect crash risk to reduce systemic risk.

3. Continuous Monitoring: Conduct continuous monitoring of corporate governance developments and R&D investments of companies in the portfolio to identify changes in risk.

1.6.3. Suggestions for Regulators
For the Financial Services Authority (OJK):

1. Strengthening Regulation: Strengthening corporate governance regulations with stricter standards and strict sanctions for violations. Implementation of the comply or explain principle can increase flexibility as well as accountability.

2. R&D Incentives: Developing incentive policies for companies investing in R&D, such as tax incentives or easy access to financing to encourage innovation.

3. Information System Standards: Establishing minimum standards for the quality of financial accounting information systems and conducting periodic supervision to ensure compliance.

4. Education Programs: Developing education programs for investors on the importance of considering factors that influence crash risk in making investment decisions.

For the Indonesia Stock Exchange (IDX):

1. Listing Requirements: Strengthening listing requirements by including stricter corporate governance and information system criteria.

2. Disclosure Standards: Increasing disclosure standards regarding R&D activities and corporate governance implementation to increase market transparency.

3. Market Surveillance: Strengthening the surveillance system to detect potential crash risks early and take preventive actions.

1.6.4. Suggestions for Academics

1. Curriculum Development: Integrate topics of stock price crash risk, corporate governance, and accounting information systems into the accounting and finance curriculum to improve students' understanding.

   2. Research Collaboration: Develop research collaboration with practitioners to produce research that is more applicable and relevant to industry needs.

   3. Knowledge Dissemination: Be active in disseminating research results through seminars, workshops, and popular publications to increase stakeholder awareness.

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3. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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