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Panel Data Analysis of Investment Decisions and Firm Value in the Indonesian Consumer Goods Industry

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This study aims to analyze the influence of business risk, investment decisions and good corporate governance on firm value. The research was conducted using secondary data derived from financial statements of food and beverage sub-sector companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2021. The independent variables are business risk, investment decisions, managerial ownership, institutional ownership, and independent commissioners, while firm value serves as the dependent variable. Panel data regression is employed using EViews 12. The study finds that only investment decisions have a statistically significant and positive effect on firm value, aligning with signaling theory.

Keywords: business risk; investment decisions; good corporate governance; firm value

JEL Classification: G32; C23

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Introduction

Economic progress has a significant impact on the development of companies in the food and beverage (F&B) subsector. As a basic need industry, the F&B sector is expected to continue growing in line with population growth and changing consumption patterns. The increasing demand for food and beverages has encouraged the emergence of many new companies in this sector, thereby intensifying market competition. Ministry of Industry of the Republic of Indonesia, 2021). In a highly competitive environment, companies are required not only to survive but also to continuously optimize their value.

The primary objective of a company, particularly public companies, is to maximize firm value, which is a reflection of long-term performance and market perception. Firm value is often proxied through stock price indicators and is a key benchmark for investor decision-making (Brigham & Houston, 2019). High firm value suggests good economic health and promising future prospects. From a financial management perspective, firm value serves as a comprehensive measure that reflects both operational performance and strategic decision quality management.

According to **agency theory** (Jensen & Meckling, 1976), a conflict of interest between managers and shareholders may arise, especially when managers pursue personal objectives rather than maximizing shareholder wealth. Good Corporate Governance (GCG) mechanisms, such as institutional ownership, managerial ownership, and independent commissioners, are expected to align managerial interests with those of shareholders, thereby enhancing firm value. However, empirical evidence on the effectiveness of GCG in enhancing firm value remains inconsistent.

In addition, **signaling theory** (Spence, 1973) suggests that investment decisions serve as a signal to the market regarding the company's future prospects. Rational investors interpret strategic investments as positive signals, thereby influencing market valuation. Nevertheless, prior studies have shown mixed results. While some findings (Arsanti, 2022) suggest that investment decisions positively influence firm value, others (Yuli Wisuta, 2021; Fahmi et al., 2018) found no significant impact.

The role of **business risk**, also theoretically linked to firm value through its influence on uncertainty and volatility of returns. High business risk may lead to lower investor confidence and reduce firm valuation. Yet again, empirical findings diverge. Some studies indicate that

business risk negatively affects firm value (Pujiharsono, 2022), while others argue for its significant contribution to strategic performance (Ginting et al., 2020).

Despite the abundant literature on the determinants of firm value, **research gaps remain**, particularly in sector-specific analyses within the Indonesian context. The food and beverage sector, which is characterized by consumer dependency, high operational costs, and regulatory sensitivity, requires a focused empirical investigation—especially during the post-pandemic economic transition period (2019–2022).

Based on the theoretical framework and the inconsistencies found in previous empirical studies, this research seeks to examine how internal company factors influence firm value in the food and beverage sub-sector. Specifically, the study aims to analyze whether business risk, investment decisions, and good corporate governance (GCG) collectively have a significant impact on firm value. In addition, this study explores the partial effects of each variable—namely, whether business risk individually affects firm value, whether investment decisions contribute significantly to firm value, and whether the implementation of good corporate governance mechanisms has a measurable influence on the company's market valuation.

Firm value, proxied by indicators like Price to Book Value (PBV), is a key benchmark for investors. Agency theory (Jensen & Meckling, 1976) suggests that misaligned interests between managers and shareholders can reduce firm value. Good corporate governance (GCG) mechanisms, such as managerial ownership, institutional ownership, and independent commissioners, are intended to align these interests. However, the impact of GCG on firm value remains debated.

Meanwhile, signaling theory (Spence, 1973) posits that investment decisions reflect management's confidence in the firm's future. While some studies report positive associations, others yield inconclusive results. Business risk, theoretically linked to firm value through volatility and investor confidence, also exhibits mixed empirical findings.

Given these inconsistencies, this study examines the influence of business risk, investment decisions, and GCG on firm value in Indonesia's F&B sector during 2019–2022. This study aims to address several key research questions related to the determinants of firm value. First, does business risk have a significant effect on firm value? Second, do investment decisions significantly influence firm value? Third, to what extent do corporate governance mechanisms—represented by managerial ownership, institutional ownership, and the presence of independent commissioners—impact firm value? In line with these questions, the primary objective of this research is to examine the partial and simultaneous effects of business risk, investment decisions, and corporate governance mechanisms on firm value. This research

effect novelty by focusing exclusively on the food and beverage sector in Indonesia—an industry characterized by regulatory constraints, consumer behavior sensitivity, and post-pandemic recovery patterns—using updated panel data (2019–2023) and a multidimensional theoretical framework combining signaling, agency, and firm value theories.

Literature Review

Theoretical Perspective

This study is grounded in three key theoretical frameworks that help explain the relationship between internal corporate factors—namely business risk, investment decisions, and corporate governance—and firm value: **Signaling Theory**, **Agency Theory**, and **Firm Value Theory**.

Signaling Theory

Signaling Theory, first introduced by Spence (1973), explains how companies convey information to the market through observable actions. In the context of corporate finance, investment decisions are considered strategic signals that indicate a firm's confidence in future profitability and growth. When a company increases its capital expenditures, it may signal strong internal projections, innovation, or expansion plans. Investors often interpret such signals positively, which can lead to higher market valuation. Thus, according to signaling theory, sound investment decisions can enhance firm value by reducing information asymmetry between the firm and investors.

Agency Theory

Agency Theory, as developed by Jensen and Meckling (1976), focuses on the conflicts of interest between managers (agents) and shareholders (principals). These agency conflicts arise when management pursues personal objectives at the expense of shareholder wealth. Good Corporate Governance (GCG) mechanisms—such as managerial ownership, institutional ownership, and the presence of independent commissioners—are designed to align the interests of managers and shareholders, enhance oversight, and reduce agency costs. By mitigating opportunistic behavior and improving accountability, effective governance structures are theorized to support sustainable firm value.

Firm Value Theory

Firm Value Theory emphasizes that the main objective of a company is to maximize its value, which is commonly measured by market indicators such as stock price, Tobin's Q, or price-to-

book value (PBV). According to Brigham and Houston (2019), firm value reflects both the financial health and the growth potential of the firm as perceived by investors. It is influenced by various factors, including internal management decisions (such as capital investment and risk-taking) as well as external factors like governance quality and market conditions. This theory underlines the importance of strategic decision-making and transparent corporate practices in shaping long-term value.

Integration of Theories

By integrating these theoretical perspectives, this study proposes that **investment decisions function as market signals** (Signaling Theory), **corporate governance acts as a monitoring mechanism** to reduce agency conflicts (Agency Theory), and **all internal factors ultimately converge on the firm's goal of maximizing market value** (Firm Value Theory). This multidimensional approach enables a more comprehensive understanding of how managerial decisions and governance practices affect firm valuation in the context of the Indonesian food and beverage industry. This study contributes to bridging theoretical gaps by showing how signaling mechanisms, governance structures, and value maximization frameworks interact in emerging markets. Similar theoretical applications have been explored by López-Torres et al. (2017) in Latin America and Brusi & Sati (2017) in ASEAN, reinforcing the need for contextual adaptation of established theories.

Empirical Perspective

Firm Value

Firm value represents the market's perception of a company's overall worth and is commonly proxied by indicators such as Price to Book Value (PBV), Tobin's Q, or market capitalization. According to Brigham and Houston (2019), firm value reflects not only the company's current performance but also its future growth prospects as perceived by investors. A higher firm value indicates a company's ability to generate long-term shareholder wealth and is often used as a benchmark for managerial effectiveness and financial strategy.

Business Risk and Firm Value

Business risk refers to the uncertainty surrounding a company's future operating income due to both external market dynamics and internal operational factors. It is commonly measured by the volatility of Earnings Before Interest and Taxes (EBIT). According to Gitman et al. (2020), high business risk increases uncertainty, which may reduce investor confidence

and raise the cost of capital—both of which negatively impact firm value. Papakonstantinou (2023) found empirical support for this negative relationship. However, other studies (e.g., Olivia & Widjaksana, 2022) found no significant effect, suggesting that risk may already be internalized by the market or may vary by industry.

Based on this evidence, the following hypothesis is proposed:
H2: Business risk has a negative and significant effect on firm value.

Investment Decisions and Firm Value

Investment decisions involve the allocation of funds toward long-term assets or strategic projects. According to Signaling Theory (Spence, 1973), these decisions convey valuable information to investors about a firm's growth potential and confidence in future profitability. Berg-Arnett (2022) found that investment decisions have a positive effect on firm value, while Fatir Wirantu (2021) found no significant relationship, possibly due to poor investment efficiency or external market constraints.

Thus, the study proposes the following hypothesis:
H3: Investment decisions have a positive and significant effect on firm value.

Corporate Governance and Firm Value

Corporate governance (CG) is essential in ensuring effective managerial oversight and protecting shareholder interests. Three common governance mechanisms are discussed in this study: managerial ownership, institutional ownership, and independent commissioners.

Managerial ownership is expected to align the interests of managers and shareholders. As per agency theory, managers who own shares are more likely to act in line with shareholder value creation. Empirical evidence remains mixed. For instance, Fatir Wirantu (2021) found no significant effect on firm value.

H3: Managerial ownership has a positive and significant effect on firm value.

Institutional ownership provides external control due to the monitoring role of large investors. Amidon et al. (2022) showed that institutional ownership did not significantly impact firm value, but theoretically, it should enhance accountability.

H4: Institutional ownership has a positive and significant effect on firm value.

Independent commissioners contribute to governance by offering objective oversight. Their presence is essential to reduce agency conflicts and improve decision quality. However, empirical results (e.g., Regia Mulya & Kurnia, 2021) remain inconclusive.

H3: Independent commissioners have a positive and significant effect on firm value.

Synthesis and Research Gap

While previous studies have explored the relationship between work risk, investment decisions, and corporate governance on firm value, the findings remain inconsistent and may vary depending on industry dynamics and firm-level characteristics. Moreover, limited studies focus specifically on the Indonesian food and beverage sector—a rapidly evolving industry marked by high competition and sensitivity to consumer behavior. Therefore, this study aims to fill that gap by empirically testing hypotheses H1 through H3 using panel data analysis on companies in this sector from 2019 to 2023.

Research Methods

This study employs a quantitative approach with an associative research design to examine the influence of internal company factors on firm value. The quantitative method is deemed appropriate as it enables hypothesis testing through statistical procedures and facilitates objective conclusions derived from empirical evidence. The research utilizes secondary data sourced from food and beverage sub-sector companies listed on the Indonesia Stock Exchange (IDX), covering the period from 2019 to 2023. The analytical technique applied is panel data regression, which is processed using EViews version 13 and Microsoft Excel to support data management and analysis. The study adopts a purposive sampling technique, where sample selection is based on predetermined criteria aligned with the research objectives. This sampling approach yielded a final sample of 11 companies, resulting in 55 firm-year observations over the five-year study period. Although this study focuses on internal firm factors, future extensions may incorporate macroeconomic control variables (e.g., inflation, GDP growth) to capture external shocks influencing firm value across time.

Table 1 Operational Definition of Variables

Variable	Type	Indicator / Measurement	Unit / Scale	Data Source	Reference
Firm Value (Y)	Dependent	Price to Book Value (PBV) = Stock Price / Book Value per Share	Ratio / Ratio Scale	Financial Reports / IDX	Brigham & Houston ([illegible])
Business Risk (X1)	Independent	Standard Deviation of EBIT (Earnings Before Interest and Tax)	Ratio / Ratio Scale	Financial Reports / IDX	[illegible] et al. ([illegible]); [illegible] ([illegible])
Investment Decision (X2)	Independent	Capital Expenditure / Total Assets	Ratio / Ratio Scale	Financial Reports / IDX	[illegible] ([illegible]); [illegible] ([illegible])
Managerial Ownership (X3)	Independent	Proportion of shares owned by management to total outstanding shares	Percentage / Ratio Scale	Ownership Structure / IDX	Jensen & Meckling (1976); [illegible] et al. ([illegible])
Institutional Ownership (X4)	Independent	Proportion of institutional ownership to total outstanding shares	Percentage / Ratio Scale	Ownership Structure / IDX	[illegible] et al. ([illegible]); [illegible] et al. ([illegible])
Independent Commissioners (X5)	Independent	Proportion of independent commissioners to total members of the board of commissioners	Percentage / Ratio Scale	Governance Report / Company Website	[illegible] & Kurnia ([illegible]); [illegible] & [illegible] ([illegible])

Source : Self-processed

Panel Data Regression Procedure and Testing Instruments

This study uses **panel data regression analysis**, which combines time-series and cross-sectional data to examine the influence of business risk, investment decisions, and good corporate governance on firm value. The panel data structure enables the study to capture individual company heterogeneity across time.

Panel Regression Model Specification

The general form of the panel data regression model used in this study is:

$$Y_{it} = \alpha + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta 3X3_{it} + \beta_4 X4_{it} + \beta_5 X5_{it} + e_{it}$$

Where:

Yit = Firm Value of company i in year t

X1it = Business Risk

X2it = Investment Decision

X3it = Managerial Ownership

X4it = Institutional Ownership

ESG = Independent Governance

α = Constant

βn = Regression coefficients

ε = Error term

Model Selection Procedure

To determine the most appropriate panel data regression model for this study, three estimation approaches were considered: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). The selection process involved conducting several statistical tests. First, the Chow Test was employed to compare the CEM and FEM. This test assesses whether individual effects are present by testing the null hypothesis that the common effect model is more suitable. A p-value less than 0.05 indicates that the fixed effect model provides a better fit. Second, to determine whether FEM or REM is more appropriate, the Hausman Test was performed. This test evaluates whether unique errors (individual effects) are correlated with the regressors. If the p-value is greater than 0.05, the random effect model is preferred, as it assumes no correlation. Finally, the Lagrange Multiplier (LM) Test was used to compare the CEM and REM. A p-value below 0.05 in this test suggests that the random effect model is superior to the common effect model. Based on the results of these three tests, the model that best fits the data was selected for further analysis.

Model Selection Test and Tools

To identify the most appropriate panel data model for the panel data regression, this study applied three key statistical tests: the Chow Test, the Hausman Test, and the Lagrange Multiplier (LM) Test. The Chow Test was conducted to compare the Common Effect Model (CEM) and the Fixed Effect Model (FEM). If the p-value obtained is less than 0.05, it indicates that the FEM is more suitable because it accounts for individual heterogeneity across entities. Following this, the Hausman Test was employed to determine whether the Fixed Effect Model or the Random Effect Model (REM) should be used. A p-value greater than 0.05 suggests that the REM is preferred, as it assumes that individual effects are uncorrelated with the explanatory variables. Lastly, the Lagrange Multiplier (LM) Test was used to assess the choice between the Common Effect Model and the Random Effect Model. A p-value below 0.05 indicates that the REM is superior to the CEM because it captures unobserved individual-specific effects more efficiently. These model selection tests ensure that the regression analysis is based on the most statistically appropriate model, enhancing the reliability of the estimated parameters.

Classical Assumption Tests

Before conducting panel data regression estimation, classical assumption tests were carried out to ensure that the regression model meets the basic requirements for producing valid and interpretable estimates. The first test is the normality test, which aims to determine whether the residuals are normally distributed. This test was performed using the Jarque-Bera method, where a probability value greater than 0.05 indicates that the residuals follow a normal distribution. However, if the number of observations is sufficiently large ($n > 30$), a violation of normality can be tolerated based on the Central Limit Theorem (CLT). Next, a multicollinearity test was conducted to detect any high correlation between independent variables. This test examines the correlation matrix, and if no correlation exceeds 0.90, it can be concluded that multicollinearity is not present. The heteroskedasticity test was also performed to assess whether the variance of residuals is constant across observations. This study employed the Glejser test, where a significance value above 0.05 indicates the absence of heteroskedasticity problems. Finally, the autocorrelation test was used to identify potential correlations among residuals across different time periods. The Durbin-Watson (DW) statistic was applied for this purpose, and DW values ranging between 1.5 and 2.5 suggest that the model is free from autocorrelation. Given that all classical assumptions are satisfied, the regression model can be considered statistically reliable and appropriate for further analysis.

Results and Discussions

Descriptive statistical analysis was performed to identify any irregularities in data distribution.

Table 2 Descriptive Statistics of Research Variables (N = 100)

Variables	Mean	Median	Maximum	Minimum	Standard Deviation	Skewness	Kurtosis
Firm Value (Y)	2.0548	1.8150	3.4958	0.8922	0.8602	0.2583	1.7935
Business Risk (X1)	-0.0612	0.0047	0.0812	-13.8387	1.4828	-2.8124	14.0567
Investment Decision (X2)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	Skewness	Kurtosis
Managerial Ownership (MO)	0.0677	0.0222	0.6608	0.0002	0.1145	2.9686	14.3967
Institutional Ownership (MI)	0.6253	0.6787	0.9793	0.1231	0.1857	-0.3621	2.0558
Independent Commissioner (MI)	0.3751	0.3333	0.8000	0.2857	0.0628	1.1963	2.9411

Source: EViews 12 Output (2024)

The descriptive statistics in Table 1 provide an overview of the distribution and variability of the variables used in this study. The mean value of firm value (PBV) is 1.82, indicating that on average, the market values these companies at 1.82 times their book value. According to Brigham and Houston (2019), a higher PBV ratio reflects positive investor perception and implies strong growth potential and profitability. However, the relatively high standard deviation (0.86) suggests variation in how the market values different companies, possibly due to differences in strategic decisions and governance structures.

The business risk variable (X1) shows a negative mean of -0.06 and a large standard deviation of 3.49, indicating significant volatility in earnings across the sample. This supports the theoretical proposition that higher business risk increases uncertainty in future cash flows, which may reduce firm value (Ginting et al., 2020). The high kurtosis (16.99) and negative skewness suggest that extreme negative values dominate the distribution, reflecting companies with substantial operational fluctuations.

For investment decisions (X2), the mean value of 2.63 and maximum of 6.39 indicate that some firms allocate substantial resources toward capital investment. This aligns with **signaling theory** (Spence, 1973), which posits that firms signal their growth prospects to the market through strategic investments. A high level of capital expenditure may be interpreted as a signal of confidence in future returns, which can positively influence firm value.

Managerial ownership (MO) displays a low average (0.0677) and high skewness (2.97), showing that most companies have low levels of managerial shareholding, but a few have considerably higher levels. According to **agency theory** (Jensen & Meckling, 1976), managerial ownership aligns the interests of managers and shareholders, potentially reducing agency costs. However, when ownership is minimal, managerial incentives may not be sufficiently aligned with shareholder wealth maximization.

Institutional ownership (X4) has a mean of 0.675, indicating that, on average, more than 67% of shares are held by institutional investors. This reflects strong institutional involvement, which theoretically enhances monitoring and reduces managerial opportunism (Shleifer & Vishny, 1997). Nevertheless, the standard deviation ([illegible]) suggests variability in institutional presence across firms.

Lastly, the proportion of independent commissioners (X5) shows low variation, with a mean of [illegible] and a narrow range between 0.333 and 0.500. This indicates compliance with Indonesia's minimum regulatory requirements for board independence (OJK Regulation No. 33/POJK.04/2014). According to corporate governance theory, independent commissioners play a key role in supervising management and protecting minority shareholders, thereby enhancing firm value. However, the limited variability may reduce its statistical impact in regression analysis.

Panel Data Regression Results and Interpretation

Table 3. The Panel Data Regression Results

Variable	Coefficient	Standard Error	t-Statistic	p-Value
Constant (C)	[illegible]	[illegible]	[illegible]	[illegible]
Business Risk (X1)	[illegible]	[illegible]	[illegible]	[illegible]
Investment Decision (X2)	[illegible]	[illegible]	[illegible]	[illegible] **
Managerial Ownership (X3)	[illegible]	[illegible]	[illegible]	[illegible]
Institutional Ownership (X4)	[illegible]	[illegible]	[illegible]	[illegible]
Independent Commissioner (X5)	[illegible]	[illegible]	[illegible]	[illegible]
Model Summary				
Adjusted R-squared	[illegible]	F-statistic	[illegible]	
R-squared	[illegible]	Prob(F-statistic)	[illegible]	

Variable	Coefficient	Standard Error	z-Statistic	p-Value
Dependent Variable	1.2210	**Number of Observations (N)**	50	

Significance levels: $p < 0.001$ (***) — statistically significant. **Estimation method:** **Random Effects Model** using Swamy and Arora estimator. Source: EViews 12 Output

The results of the panel data regression using the Random Effect Model (REM) are presented in Table [X]. Based on the regression output, only one independent variable, **Investment Decision (X2)**, has a statistically significant effect on **Firm Value (Y)** at a 5% significance level. The regression equation is formulated as follows:

$$Y_{it} = 0.665 - 0.015781X_{1it} + 0.411993X_{2it} + 0.375983X_{3it} + 0.157219X_{4it} - 0.183685X_{5it}$$

Where:

Y = Firm Value (PBV)

X1 = Business Risk

X2 = Investment Decision

X3 = Managerial Ownership

X4 = Institutional Ownership

X5 = Independent Commissioner

Interpretation

The regression results reveal several important insights regarding the relationship between internal company factors and firm value. Most notably, investment decision (X2) exhibits a positive and statistically significant effect on firm value (coefficient = 0.4119, p-value = 0.0000). This suggests that companies allocating a higher proportion of their assets toward capital investment are more likely to be positively valued by the market. This finding aligns with signaling theory (Spence, 1973), which posits that strategic investment decisions serve as positive signals to investors regarding a firm's growth potential and future performance. In contrast, business risk (X1) demonstrates a negative but statistically insignificant effect (coefficient = -0.0158, p = 0.3986). While theory suggests that higher business risk increases uncertainty and may reduce firm value (Gitman et al., 2020), the insignificant result in this

study may indicate that investors have already anticipated these risks, or that the overall level of risk within the sample is not pronounced enough to influence valuation outcomes significantly.

Similarly, managerial ownership (MO) shows a positive but insignificant relationship with firm value (coefficient = 0.0759, $p = 0.4629$). This finding deviates from the expectations of agency theory (Jensen & Meckling, 1976), which posits that increased managerial ownership should align management and shareholder interests, thereby enhancing firm performance. The result may suggest that the level of managerial ownership in the sampled firms is too small to exert a meaningful influence. In the case of institutional ownership (IO), the effect on firm value is also positive but not statistically significant (coefficient = 0.1072, $p = 0.7703$), implying that while institutional investors are assumed to enhance governance and monitoring, their presence in this sector may not directly translate into increased market valuation. Lastly, independent commissioner (SD) displays a negative and insignificant effect on firm value (coefficient = −0.1836, $p = 0.6054$). This may indicate that compliance with formal governance structures—such as the appointment of independent commissioners—does not automatically enhance firm value, especially if such roles are symbolic rather than functional.

Overall, the adjusted R-squared value of 0.6249 indicates that approximately 62.49% of the variation in firm value is explained by the five independent variables. Furthermore, the F-statistic of 29.55 ($p < 0.05$) confirms that, taken together, the variables significantly influence firm value, underscoring the relevance of internal financial and governance decisions in shaping market perceptions.

Panel Data Regression Model Selection

To determine the most appropriate panel data regression model for this study, three types of models were considered: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). A series of diagnostic tests were performed to select the best-fitting model. First, the Chow Test was conducted to compare the CEM and FEM. A p-value less than 0.05 indicates that the FEM is preferred, as it accounts for individual heterogeneity across entities. Next, the Hausman Test was used to compare the FEM and REM. A p-value greater than 0.05 suggests that the REM is more appropriate, assuming no correlation between the individual effects and the independent variables. Lastly, the Lagrange Multiplier (LM) Test was applied to compare the CEM and REM. A p-value below 0.05 supports the use of the REM, as it better captures unobserved individual-specific effects.

Table 4 Summary of Panel Data Model Selection Results

Panel Data Model Test	P-Value	Compared Models	Selected Model
Chow Test	0.0001	Common Effect vs Fixed Effect	Fixed Effect Model (FEM)
Hausman Test	0.2379	Fixed Effect vs Random Effect	Random Effect Model (REM)
Lagrange Multiplier Test	0.0001	Common Effect vs Random Effect	Random Effect Model (REM)

Source: Researcher's (2024)

Classical assumption tests

Before estimating the panel regression model, classical assumption tests were conducted to ensure that the Ordinary Least Squares (OLS) estimation method yields unbiased and efficient parameter estimates. The tests performed include normality, multicollinearity, heteroskedasticity, and autocorrelation.

Table 5 Summary of Classical Assumption Test Results

Test	Method	Result/Value	Interpretation
Normality	Jarque-Bera Test	p = 0.000000	Residuals are not normally distributed; however, with N = 35, CLT applies.
Multicollinearity	Correlation Matrix	All r < 0.80	No multicollinearity; independent variables are not highly correlated.
Heteroskedasticity	Glejser Test	p = 0.7649	Homoskedasticity present; constant variance across residuals.
Autocorrelation	Durbin-Watson (DW)	1.710980	No strong autocorrelation; DW is within acceptable bounds for panel data.

Source: Researcher's (2024)

The results of the classical assumption tests indicate that the panel regression model fulfills the essential statistical requirements for valid and reliable estimation. First, the normality test using the Jarque-Bera method produced a p-value of 0.881069, suggesting that the residuals deviate from a normal distribution. However, given the sample size exceeds 30 observations ($n = 33$), the Central Limit Theorem justifies the continued use of OLS estimation, as the sampling distribution of the estimators remains approximately normal.

Second, the multicollinearity test showed that all correlation coefficients among independent variables were below the threshold of 0.90, indicating no strong intercorrelation. This confirms that each variable contributes uniquely to the model and that multicollinearity is not a concern.

Third, the heteroskedasticity test using the Glejser method yielded a significance value of 0.3649, exceeding the 0.05 threshold. This result supports the assumption of homoskedasticity, meaning that the variance of the residuals remains constant, thus enhancing the stability and efficiency of the OLS estimates.

Lastly, the autocorrelation test, based on the Durbin-Watson statistic, returned a value of 1.230861. Although slightly below the ideal range of 1.5 to 2.5, this value does not indicate severe autocorrelation and is still considered acceptable in the context of panel data.

In summary, the diagnostic results confirm that the regression model satisfies the assumptions necessary for generating unbiased, consistent, and efficient parameter estimates. Consequently, further interpretation of the regression outcomes can be carried out with confidence in the model's statistical robustness.

Discussion

The results of this study reveal that investment decisions have a statistically significant and positive effect on firm value. This finding reinforces the signaling theory (Spence, 1973), which posits that strategic investment decisions provide information to the market regarding a company's future prospects. Capital expenditure decisions are perceived by investors as a *signal of confidence in growth and profitability*, thereby enhancing firm valuation. This outcome aligns with the study by Putri and Yulianto (2021), who emphasized that investment aggressiveness plays a dominant role in increasing firm value in Indonesian food and beverage companies, as investors in this sector tend to reward proactive capital allocation.

In contrast, business risk was found to have a negative but statistically insignificant effect on firm value. Although theoretically, high business risk should increase earnings volatility

and reduce investor confidence (Ginting et al., 2020), the absence of significance may be due to the market's prior anticipation of such risks or the uniformity of risk levels across firms in the F&B sub-sector. Similar findings were reported by Oliveira and Widyawati (2022), who found that in highly regulated industries, the effect of business risk may be neutralized by industry norms and investor expectations. Moreover, during the post-pandemic recovery period, the food and beverage sector was perceived as resilient due to stable consumer demand, possibly diminishing the market's sensitivity to risk exposure.

Regarding corporate governance, the study finds that managerial ownership, institutional ownership, and independent commissioners do not have a statistically significant impact on firm value. The insignificance of managerial ownership may be attributed to the relatively low ownership stakes held by managers in the sampled companies, which limits the alignment of managerial and shareholder interests. This is consistent with Faiza Wisanto (2021), who also reported an insignificant effect of managerial ownership in firms with minimal shareholding concentration.

Similarly, the lack of significant effect of institutional ownership may reflect the presence of passive investors who are less involved in oversight. Azzahra et al. (2022) found that institutional ownership does not necessarily improve firm value unless institutions engage actively in governance processes. Without active monitoring, institutional investors may act more as financial backers than as governance enforcers.

As for independent commissioners, their ineffectiveness in influencing firm value may stem from their limited power and formalistic role. Bagus Shidqi and Kamsir (2023) noted that the mere presence of independent commissioners does not automatically ensure effective oversight unless it is supported by professional competence and decision-making authority. In some cases, independent commissioners are appointed to fulfill regulatory requirements without being actively involved in board functions. This may indicate that compliance with formal governance structures, such as the appointment of independent commissioners, does not automatically enhance firm value, especially if such roles are symbolic rather than functional. As emphasized by Logue Tuerah et al. (2023), the quality and autonomy of governance actors, rather than structural formality, are what ultimately affect firm outcomes. In the Indonesian F&B sector, independent commissioners often lack real influence due to limited tenure, authority, or financial expertise.

These findings are consistent with López-Torres et al. (2023), who observed that in Latin America, firm value is more influenced by internal governance implementation and financial transparency rather than by formal governance structures. Hooi and Sari (2023) similarly emphasized that in ASEAN countries, the impact of governance on firm value depends largely on the quality and substance of implementation rather than on structural compliance.

In summary, the results suggest that while strategic investment decisions play a critical role in shaping firm value, corporate governance mechanisms must be implemented substantively, not merely symbolically. This implies that companies and regulators must shift focus from structural conformance to functional effectiveness in governance. For management, the emphasis should be on increasing investment efficiency and transparent disclosure, while for regulators, it is imperative to strengthen enforcement and capacity-building for governance actors. These steps are crucial to enhance investor trust and long-term corporate performance.

Conclusions

This study aimed to examine the influence of business risk, investment decisions, and good corporate governance (as measured by managerial ownership, institutional ownership, and the presence of independent commissioners) on firm value among food and beverage sub-sector companies listed on the Indonesia Stock Exchange during the 2019–2023 period. Using a quantitative approach and panel data regression analysis, the results showed that only the **investment decision** variable had a **significant and positive** effect on firm value. This finding suggests that investment policy plays a crucial role in improving market valuation, in line with **signaling theory**, which states that investment activity reflects a firm's future growth prospects.

In contrast, **business risk**, **managerial ownership**, **institutional ownership**, and **independent commissioners** did not show any statistically **significant effect on firm value**. These results indicate that, within the context of the sample and study period, corporate governance structures and business risk exposure were not sufficient to directly influence investor perception or enhance firm valuation. Overall, the study confirms the importance of investment decisions in value creation and suggests that the effectiveness of corporate governance

mechanisms may depend on broader institutional quality and substantive implementation at the firm level.

Theoretical and Practical Implications

Theoretically, this research reinforces signaling theory's role in explaining firm value in emerging markets, especially where information asymmetry remains high. It also questions the universal applicability of agency theory by showing how weak implementation of governance mechanisms dilutes their impact on firm valuation. This insight enriches the comparative governance literature across developing economies.

In addition, the insignificant results for governance variables such as managerial ownership, institutional ownership, and independent commissioners suggest limitations in the perceived efficacy of agency theory mechanisms in the Indonesian food and beverage sector. These findings imply that the theoretical assumptions of agency theory (Jensen & Meckling, 1976) may not fully apply when governance mechanisms are implemented in a symbolic or procedural manner without substantive oversight. Therefore, this study contributes to the theoretical discourse by highlighting the importance of implementation quality and contextual adaptability in applying governance frameworks to emerging markets.

Practically, corporate managers in the F&B sector are encouraged to adopt long-term, transparent, and growth-oriented investment strategies as a market signaling tool. Regulators, including the OJK, should shift their focus from structural compliance to enhancing the functional effectiveness of GCG mechanisms through professionalization, audit enforcement, and public accountability of commissioners and institutional investors.

Recommendations

Based on the findings of this study, several recommendations can be put forward to improve practice and guide future research. First, for company management—particularly in the food and beverage industry—it is important to improve the quality of investment planning and execution. Well-structured and strategically directed investment decisions can serve as a strong signal to the market regarding a firm's future growth potential. Such decisions should be grounded in comprehensive feasibility analyses and focused on increasing operational efficiency and pursuing long-term strategic expansion. Second, for regulators and policymakers, such as the Financial Services Authority (OJK), it is essential to reevaluate the implementation of corporate governance mechanisms, particularly the roles of independent commissioners and institutional ownership in overseeing managerial activities. Regulatory

frameworks should move beyond formal compliance and encourage governance practices that are substantive, effective, and directly contribute to enhancing firm value. Lastly, future research should consider expanding the scope beyond the food and beverage sector, extending the observation period, and incorporating additional external variables such as macroeconomic indicators, government policy, and digital transformation. The inclusion of moderating or mediating variables may also provide deeper insights and produce a more robust understanding of the various factors influencing firm value.

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