AICIEB **Annual International Conference**
on Islamic Economics and Business, 2025, 333-342

Investment Efficiency Factors in JII 70 Indonesia Companies: Debt Maturity and Diversity Managerial with Growth Opportunity as a Moderating Variable (2021-2024)

Eko Purnomo[1]

[1] Faculty of Islamic Economics and Business, UIN Salatiga

Abstract. This article examines the influence of debt maturity and managerial diversity, which encompasses variations in educational background and gender composition, on the efficiency of corporate investment decisions. It also evaluates the moderating role of growth opportunity within firms included in the Jakarta Islamic Index 70. Using a quantitative research design, the study draws on secondary data from annual reports covering the period from 2021 to 2024, resulting in one hundred and eight observations selected through purposive sampling. Panel data regression analysis conducted with the support of EViews 13 shows that debt maturity significantly reduces investment efficiency, while diversity in educational background contributes positively to more efficient investment outcomes. In contrast, gender diversity does not demonstrate a meaningful statistical effect. Furthermore, the findings confirm that growth opportunity strengthens the relationships among debt maturity, educational background diversity, gender diversity, and investment efficiency, indicating that firms with stronger growth prospects are better positioned to translate governance attributes and financial structures into effective investment decisions.

Keywords: Investment efficiency, Debt maturity, Educational background diversity, Gender diversity, Growth opportunity.

1 Introduction

Investment efficiency is an essential indicator of how effectively firms allocate resources to generate sustainable value and long-term growth. In Indonesia, investment activities have expanded as participation in the capital market increases among both experienced and young investors (Chandra & Sari, 2022). However, national indicators reveal persistent inefficiencies in capital allocation. Fajriani et al., (2021)) indicate that Indonesia's Incremental Capital Output Ratio (ICOR) remains high, while Statistics Indonesia (2024) reports that ICOR is still around 6 above the ideal benchmark of 3–4. Although ICOR decreased from 8.66 in 2021 to 6.02 in 2022, it remains higher than the ASEAN average. Similar inefficiencies appear at the sectoral level, particularly in the cement and mining industries where expansion does not produce proportional investment outcomes (Kemenprin, 2024).

Debt maturity is one of the factors that may influence investment efficiency, as it reflects a firm's debt repayment structure and determines its liquidity pressure and managerial flexibility. Short-term debt is often associated with stronger managerial discipline and reduced agency conflicts (Arumdari 2019). Nevertheless, prior empirical studies have produced inconsistent findings. Fransiska & Triani (2018) find that debt maturity has no significant effect on investment efficiency, while research by Kurniati et al.,(2023) and Marsya & Dewi (2022) documents a positive influence. These contradictory results highlight the need for deeper analysis, particularly among firms operating under varying financial constraints and governance environments.

Diversity in educational background is another factor believed to influence investment decision-making. Managers with diverse educational experiences are assumed to provide broader analytical perspectives and enhance the quality of project evaluation (Gusmawan & Novita, 2017). However, empirical evidence remains inconclusive. Studies by Chandra & Sari (2022) and Apriyana (2016) report that educational background diversity does not significantly affect investment efficiency. These differences suggest that the impact of educational background diversity may depend on internal organizational conditions and the ability of firms to integrate diverse knowledge effectively into decision-making processes.

Gender diversity has also been examined as a determinant of investment efficiency, given that the presence of women in leadership positions may improve monitoring quality and enrich decision-making perspectives. Some studies indicate a positive influence of gender diversity on investment outcomes (Suprapto 2014; Al-Radaideh & Ibrahim ,2023), while others find no significant effect (Darmawan & Roba'in, 2022; Gusmawan & Novita, 2017; Chandra & Sari, 2022). These inconsistent findings indicate that the role of gender diversity is contingent on firm

1 Corresponding author: ekopurnomo.ab@gmail.com

characteristics, cultural environments, and the extent to which diverse views are accommodated in managerial decisions.

Growth opportunity represents another factor that may shape how efficiently firms allocate their investment resources. Companies with strong growth prospects are expected to manage resources more effectively, as reflected in higher market-to-book ratios that signal stronger investor expectations (Jamaludin Iskak, 2020). However, studies exploring growth opportunity as a moderating variable in the relationship between debt maturity, managerial diversity, and investment efficiency remain limited. This gap provides room to investigate whether growth prospects strengthen or weaken the influence of firm-level characteristics on investment outcomes.

Given the inconsistencies in prior findings and the limited focus on Sharia-compliant firms, this study examines companies listed in the Jakarta Islamic Index 70 (JII70) during 2021–2024. Firms within this index operate under specific financing structures, liquidity constraints, and Sharia governance principles, making them a relevant context for understanding investment efficiency in Islamic capital markets. Therefore, this research aims to analyze the influence of debt maturity and managerial diversity on investment efficiency and to evaluate whether growth opportunity moderates these relationships within Sharia-compliant firms in Indonesia. By addressing these gaps, this study contributes to strengthening theoretical understanding and providing practical insights related to investment decision dynamics in Islamic financial settings.

2 Theory and Variable

2.1 Agency Theory

Agency theory explains that the separation of interests between owners and managers creates information asymmetry, which can lead to opportunistic behavior and investment inefficiency (Jensen & Meckling 1976). The use of shorter debt maturity can reduce managerial opportunism because short-term obligations enhance creditor monitoring and impose stronger managerial discipline (Marsya & Dewi, 2022). Furthermore, managerial diversitysuch as educational and gender diversity strengthens the internal monitoring function, thereby promoting more prudent and efficient investment decisions (Chandra & Sari, 2022).

2.2 Signaling Theory.

Signal theory states that firms convey credible information to external parties to reduce information asymmetry and help investors evaluate risks and future prospects more accurately (Spence, 1973). In this context, managerial diversity acts as a governance signal because diverse educational backgrounds and gender composition reflect professionalism, analytical capability, and stronger supervisory capacity (Chandra & Sari, 2022). Growth opportunity also serves as a positive signal regarding the firm's future prospects and value-creation potential (Jamaludin Iskak, 2020).

2.3 Investment Efficiency

Investment efficiency represents a firm's ability to allocate resources optimally to avoid both overinvestment and underinvestment (Pratama & Jayusman, 2022). Inefficient capital allocation may reduce firm value and increase financial risk (Suaidah & Sebrina, 2020). Investment efficiency is influenced by financing structure, corporate governance, and growth potential (Nathaniel, 2019). Its measurement often employs the sales–growth-based investment model developed by Chen et al., (2010), expressed as:

$$Investment_{i,t} = \beta_0 + \beta_1 \, SalesGrowth_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

2.4 Debt Maturity

Debt maturity refers to the structure of the firm's debt obligations, specifically the proportion of short-term versus long-term debt. Short-term debt may increase managerial discipline and discourage inefficient investment decisions (Fransiska & Alit Triani, 2019). However, an excessive proportion of short-term debt may raise liquidity risk and refinancing pressure (Hilmi & Aini, 2023). Debt maturity is commonly measured using the ratio of short-term debt to total debt (Cutillas & Sánchez, 2012):

$$STDebt = \frac{Short\text{-}Term\ Debt}{Total\ Debt} \quad (2)$$

2.5 Educational background diversity

Educational background diversity captures differences in academic backgrounds within management, which may broaden perspectives in risk assessment and investment evaluation, leading to more comprehensive decision-making (Chandra & Sari, 2022). While some studies show that educational background diversity improves monitoring effectiveness, other findings remain inconsistent, indicating a need for further examination (Lubis et al., 2021). This variable is measured using the Blau Index, which represents the degree of heterogeneity in educational composition.

$$BI = 1 - \sum_{i=1}^{n} p_i^2 \quad (3)$$

2.6 Gender Diversity

Gender diversity reflects the proportion of women within the managerial structure or board. Female representation is associated with more cautious, transparent, and risk-averse decision-making, which may help reduce tendencies toward overinvestment (Gusmawan & Novita, 2017; Darmawan & Roba'in, 2022). Gender diversity is also measured using the Blau Index to capture the level of heterogeneity in the gender composition of management.

$$BI = 1 - \sum_{i=1}^{n} p_i^2 \quad (4)$$

2.7 Growth opportunity

Growth opportunity represents the firm's future growth potential and is often interpreted as a signal of strong prospects and long-term value creation (Jamaludin Iskak, 2020)). Firms with high growth opportunities tend to be more closely monitored by investors, which encourages managers to maintain investment discipline and avoid unproductive projects. This variable is generally measured using total asset growth:

$$Growth\ Opportunity = \frac{Total\ Assets_{t} - Total\ Assets_{t-1}}{Total\ Assets_{t-1}} \quad (5)$$

3 Research Method

This study employs a quantitative approach as the primary methodology for data collection and empirical analysis. The quantitative design was selected because it allows for systematic measurement, objective assessment, and statistical testing of the relationships among variables included in the research framework. The population of this study consists of all companies listed in the JII70 index during the period from 2021 to 2024, representing firms that meet the criteria of Islamic-compliant investment as determined by the index provider. From this population, a total of 116 firms were initially identified as the objects of preliminary observation. To determine the final research sample, a purposive sampling technique was applied. The criteria set for inclusion required companies to be consistently listed in the JII70 index across the entire observation period and to possess complete and accessible data for all variables investigated in this study. After applying these criteria and conducting a detailed screening process, 108 companies were confirmed as relevant and eligible for further analysis.

The study relies exclusively on secondary data, which were obtained from publicly available sources, specifically annual financial statements and governance reports. These documents were downloaded from the official website of the Indonesia Stock Exchange (IDX) at www.idx.co.id. The use of secondary data is intended to ensure objectivity, reliability, and comparability across firms and years. Subsequently, all collected data were processed and analyzed using Eviews software, which provides a comprehensive suite of tools suitable for econometric analysis of panel data. The analytical procedures implemented in this study include descriptive statistics to summarize and illustrate the basic characteristics of the dataset, followed by a series of classical assumption testsnamely normality, multicollinearity, heteroscedasticity, and autocorrelation teststo assess the validity and robustness of the regression model. Conducting these diagnostic tests is essential to ensure that the underlying assumptions of panel data regression are satisfied and that the resulting estimates are unbiased and efficient.

To determine the most appropriate panel data estimation model, the study performs three model specification tests: the Chow test, the Hausman test, and the Lagrange Multiplier (LM) test. These tests are employed to compare and select the optimal model between common effect, fixed effect, and random effect specifications based on statistical criteria. After establishing the suitable model, hypothesis testing is conducted using panel data regression and Moderated Regression Analysis (MRA). These analytical techniques are utilized to examine the influence of debt maturity, educational background diversity, and gender diversity on investment efficiency, as well as to assess the moderating role of growth opportunity in strengthening or altering these relationships. Furthermore, the model's overall significance is evaluated using the F-test, while the t-test is applied to assess the

partial effect of each independent variable. Additionally, the coefficient of determination (R^2) is employed to measure the explanatory power of the independent variables in accounting for variations in investment efficiency. This structured methodological framework ensures that the findings generated by this study are rigorous, statistically reliable, and aligned with the research objectives.

4 Result and Discussion

4.1 Results of Descriptive Statistical Analysis

Descriptive analysis is a statistical method used to summarize and present the characteristics of a dataset including measures such as the mean, standard deviation, maximum, and minimum values—thereby transforming complex information into a more concise and interpretable form (Anggraeni & Widati, 2022). The following table presents the descriptive statistical results for the independent, dependent, and moderating variables employed in this study, estimated using EViews 13.

Table 1. Results of Descriptive Statistical Analysis

	Y	X1	X2A	X2B	Z
Mean	0.039757	0.603147	0.684194	0.323981	0.078551
Median	0.040105	0.573146	0.694600	0.319808	0.057271
Maximum	0.043619	0.995631	0.820675	0.490100	1.197490
Minimum	0.016321	0.174200	0.530830	9.00E-06	-0.145668
Std. Dev.	0.003130	0.223347	0.061559	0.097876	0.154639
Skewness	-4.279849	-0.002866	-0.206123	-0.347261	4.546045
Kurtosis	30.95668	1.941723	2.332936	2.862639	30.64982

Source: Processed using EViews 13, 2025.

Table 1 reports the descriptive statistical outcomes for all variables employed in this study, namely investment efficiency (Y), debt maturity (X1), educational background diversity (X2A), gender diversity (X2B), and growth opportunity (Z). The descriptive analysis outlines the measures of central tendency, dispersion, and distributional characteristics derived from firms included in the JII70 index during the observation period. These descriptive statistics offer a preliminary understanding of the dataset's structural properties and establish an analytical foundation for the subsequent econometric procedures, including regression modelling and diagnostic testing.

The results reveal that investment efficiency has a mean value of 0.039757 and a standard deviation of 0.003130, indicating minimal variability and suggesting that the efficiency levels across firms remain relatively stable. The debt maturity variable records a mean of 0.603147 with a standard deviation of 0.223347, reflecting a wider dispersion and indicating notable heterogeneity in corporate debt maturity structures.

Educational background diversity exhibits a mean of 0.684194 and a standard deviation of 0.061559, implying that although differences in educational backgrounds exist among firms, the degree of diversity remains consistently distributed. Gender diversity presents a mean value of 0.323981 and a standard deviation of 0.097876, signalling a moderate level of variation in female representation within company decision-making structures.

Growth opportunity has a mean value of 0.078551 accompanied by a standard deviation of 0.154639, which is relatively high when compared to its mean. This indicates considerable variation in firms' growth prospects across the JII70 index. Such disparities may stem from differences in operational strategies, competitive environments, or firm-specific attributes that influence future expansion potential.

4.2 Hypothesis Testing Results

4.2.1 F-Test Results

To evaluate whether the independent variables collectively influence the dependent variable, the model was further examined using the F-test as a measure of overall model fit. The results of this joint significance test are summarized in Table 2.

Tabel 2. F-Test Results

R-squared	0.955113	Mean dependent var	0.039757
Adjusted R-squared	0.931387	S.D. dependent var	0.003130
S.E. of regression	0.000820	Akaike info criterion	-11.10487

Sum squared resid	4.70E-05	Schwarz criterion	-10.16116
Log likelihood	637.6630	Hannan-Quinn criter.	-10.72223
F-statistic	40.25594	Durbin-Watson stat	2.577840
Prob(F-statistic)	0.000000		

Source: Processed using EViews 13, 2025.

The results presented in Table 2 indicate that the model's F-statistic is 40.25594 with a probability value of 0.000000. Since the probability value is lower than the 0.05 significance threshold, the findings confirm that the overall regression model is statistically significant. This implies that debt maturity, educational background diversity, gender diversity, and their respective interaction terms with growth opportunity jointly exert a significant influence on investment efficiency. Thus, the independent variables included in the model, when considered simultaneously, are capable of explaining variations in the dependent variable in a meaningful and statistically robust manner.

4.2.2 t-Test Results

The t-test is applied to examine the individual influence of each independent variable on the dependent variable, with significance determined at the 0.05 level (Bawono & Shina, 2018); Chosiah, 2020).

Tabel 3. t-Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039468	0.001538	25.65986	0.0000
X1	-0.004007	0.001286	-3.115726	0.0027
X2A	0.004789	0.002351	2.036915	0.0454
X2B	0.002366	0.001752	1.350308	0.1813
X1Z	-0.033062	0.006034	-5.479211	0.0000
X2AZ	-0.026646	0.007377	-3.612080	0.0006
X2BZ	0.073197	0.013189	5.549767	0.0000

Source: Processed using EViews 13, 2025.

The results of the t-test reported in Table 3 demonstrate that debt maturity has a negative and statistically significant effect on investment efficiency, as indicated by its coefficient of –0.004007 and a probability value of 0.0027. Educational background diversity exhibits a positive and significant relationship with investment efficiency, supported by a coefficient of 0.004789 and a probability value of 0.0454. Conversely, gender diversity does not show a significant effect on investment efficiency, as reflected by its probability value of 0.1813, which exceeds the 0.05 significance level.

Regarding the moderating variables, growth opportunity significantly moderates the relationship between debt maturity and investment efficiency, with the interaction term X1Z yielding a negative coefficient of –0.033062 and a probability value of 0.0000. This suggests that higher growth opportunities amplify the negative impact of debt maturity on investment efficiency. Similarly, the interaction between educational background diversity and growth opportunity (X2AZ) is negative and significant, with a coefficient of –0.026646 and a probability value of 0.0006, indicating that growth opportunity weakens the positive effect of educational background diversity.

In contrast, the interaction between gender diversity and growth opportunity (X2BZ) has a positive and highly significant coefficient of 0.073197 (Prob. 0.0000), implying that growth opportunity enhances the contribution of gender diversity to investment efficiency.

4.2.3 Moderated Regression Analysis (MRA) Results

The Moderated Regression Analysis (MRA) is employed in this study to evaluate whether growth opportunity alters the strength or direction of the relationships between debt maturity, educational background diversity, gender diversity, and investment efficiency.

Table 4. MRA Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039468	0.001538	25.65986	0.0000
X1	-0.004007	0.001286	-3.115726	0.0027

X2A	0.004789	0.002351	2.036915	0.0454
X2B	0.002366	0.001752	1.350308	0.1813
X1Z	-0.033062	0.006034	-5.479211	0.0000
X2AZ	-0.026646	0.007377	-3.612080	0.0006
X2BZ	0.073197	0.013189	5.549767	0.0000

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.955113	Mean dependent var	0.039757
Adjusted R-squared	0.931387	S.D. dependent var	0.003130
S.E. of regression	0.000820	Akaike info criterion	-11.10487
Sum squared resid	4.70E-05	Schwarz criterion	-10.16116
Log likelihood	637.6630	Hannan-Quinn criter.	-10.72223
F-statistic	40.25594	Durbin-Watson stat	2.577840
Prob(F-statistic)	0.000000		

Source: Processed using EViews 13, 2025.

The results further demonstrate that growth opportunity serves as a significant moderating variable within the model. The interaction term between debt maturity and growth opportunity (X1Z) exhibits a coefficient of –0.0331 with a probability value of 0.0000, indicating strong statistical significance. This finding suggests that higher growth opportunities amplify the negative effect of debt maturity on investment efficiency, implying that firms with substantial growth prospects are more sensitive to the maturity structure of their debt when allocating investment resources.

In addition, growth opportunity is found to moderate the relationship between educational background diversity and investment efficiency. The interaction term X2AZ yields a coefficient of –0.0266 with a probability of 0.0006, confirming that growth opportunity weakens the positive influence of educational background diversity. This result indicates that in firms with high growth potential, heterogeneous educational backgrounds among decision-makers may introduce greater variability in strategic judgment, thereby reducing the net positive impact of such diversity on investment efficiency.

Conversely, the interaction between gender diversity and growth opportunity (X2BZ) shows a positive coefficient of 0.0732 with a highly significant probability value of 0.0000. This indicates that growth opportunity strengthens the effect of gender diversity on investment efficiency. Firms with strong growth prospects appear to benefit more from gender-diverse leadership, potentially due to enhanced decision-making dynamics, broader perspectives, and more adaptive strategic responses under conditions of expanding opportunities.

4.2.4 Coefficient of Determination (R^2)

Based on the results presented in Table 4, the model exhibits an R-squared value of 0.955113, indicating that the independent variables collectively account for approximately 95.51% of the variation in investment efficiency. The remaining 4.49% is explained by other factors outside the scope of the model. This remarkably high explanatory power reflects the model's strong goodness-of-fit and underscores its robustness in capturing the key determinants of investment efficiency among firms listed in the JII70 index.

4.3 Discussion

4.3.1 The Influence of Debt Maturity on Investment Efficiency

The empirical results demonstrate that debt maturity exerts a negative and statistically significant effect on investment efficiency, as indicated by a coefficient of –0.004007 with a probability value of 0.0027. Firms that depend heavily on short-term debt face intensified liquidity pressure, which obliges managers to allocate cash toward meeting near-term obligations rather than pursuing long-term value-creating projects. This situation reduces managerial flexibility, increases the likelihood of delaying positive-NPV investments, and ultimately leads to inefficient capital allocation. Within the framework of agency theory, short-term debt may initially provide a monitoring mechanism that limits excessive managerial discretion (Jensen & Meckling, 1976). However, when the proportion of short-term borrowing becomes excessively high, the disciplinary function shifts toward a constraint that restricts managerial judgment and impairs the firm's strategic response capacity.

Supporting evidence from prior studies further strengthens this interpretation. Research by Novyarni et al., (2023), Sukarno et al., (2022), and Zaky et al., (2025) consistently finds a significant negative association between debt maturity and investment efficiency, particularly among firms operating with elevated leverage ratios. Their findings highlight that short-term debt—while useful as a governance tool—can expose firms to refinancing risk and force managers into short-termism, thereby intensifying underinvestment problems. Taken together, these results emphasize the importance of maintaining a balanced maturity structure that ensures sufficient monitoring yet preserves financial flexibility. A stable combination of short- and long-term financing enables firms to navigate liquidity constraints without sacrificing investment opportunities that contribute to sustainable value creation.

4.3.2 The Influence of Educational background diversity on Investment Efficiency

The findings reveal that educational background diversity within the management team has a positive and significant impact on investment efficiency, as reflected in a coefficient of 0.004789 and a probability value of 0.0454. Differences in educational backgrounds provide broader cognitive resources, diverse analytical approaches, and a richer understanding of strategic alternatives. Such heterogeneity enhances the rigor of project evaluation and supports more objective investment decisions. Within the context of agency theory, educational background diversity also contributes to more effective internal monitoring by enabling cross-checking of assumptions and reducing the likelihood of opportunistic behavior (Gusmawan & Novita, 2017). These mechanisms collectively improve the firm's ability to identify profitable opportunities and mitigate errors in capital allocation.

Beyond strengthening analytical decision-making, educational background diversity also plays a role in balancing investment-related risks. A management team composed of individuals with diverse academic foundations is better equipped to recognize potential pitfalls, evaluate long-term consequences, and differentiate between overinvestment and underinvestment tendencies. This balanced perspective ensures that projects are assessed in a comprehensive manner, increasing the accuracy of investment selection. The positive empirical relationship suggests that firms benefit from promoting varied educational backgrounds within top management, as such diversity encourages multidimensional reasoning and ultimately enhances investment efficiency. Thus, educational background diversity emerges not merely as a demographic characteristic but as a strategic resource that strengthens the quality of financial decision-making.

4.3.3 The Influence of Gender Diversity on Investment Efficiency

The analysis shows that gender diversity does not have a statistically significant effect on investment efficiency, as indicated by a coefficient of 0.002366 and a probability value of 0.1813. One plausible explanation for this insignificant relationship is the limited presence of women in decision-making roles, which restricts their influence on strategic investment deliberations. Organizational cultures that remain dominated by male leadership may further impede the contribution of female managers, thereby diminishing the potential benefits of gender heterogeneity (Gusmawan & Novita, 2017; Chandra & Sari, 2022). Although the positive coefficient suggests that women may introduce beneficial perspectives, the structural and cultural constraints within many firms prevent these advantages from manifesting fully in investment outcomes.

Nevertheless, the findings should not be interpreted as evidence that gender diversity lacks strategic value. Instead, they highlight the contextual nature of its influence. In settings where women hold stronger positions or where decision-making is more collaborative, prior literature has shown that gender diversity can lead to improved governance, more cautious investment attitudes, and balanced risk evaluations. These characteristics can, under the right conditions, enhance the precision of investment decisions and reduce misallocation of capital. The results of this study therefore indicate that the potential contribution of gender diversity is contingent upon organizational structure, cultural inclusiveness, and the degree of authority held by female managers. Strengthening these dimensions may allow firms to more fully realize the benefits associated with gender-balanced management teams.

4.3.4 The Effect of Debt Maturity on Investment Efficiency Moderated by Growth Opportunity

Growth opportunity significantly moderates the relationship between debt maturity and investment efficiency, as shown by the interaction coefficient of –0.033062 and a probability value of 0.0000. In firms with strong growth prospects, managers experience heightened pressure to respond quickly to emerging opportunities while simultaneously meeting short-term financial obligations. When the firm carries a high level of short-term debt, this dual pressure constrains strategic maneuverability and increases the risk of foregoing profitable investments. The underinvestment problem becomes more severe because liquidity constraints induced by short-term debt overshadow the potential returns from long-term opportunities. These findings reinforce the argument that short-

term debt, although potentially beneficial in low-growth settings, becomes increasingly detrimental when firms operate in dynamic and expanding markets.

The moderating effect observed in this study aligns with the conclusions of Sandiar (2012), who indicates that firms with high growth opportunities are more sensitive to their financing structures when making investment decisions. In growing firms, the need for rapid execution amplifies the negative effect of short-term debt, thereby intensifying operational rigidity. As a result, firms must carefully design their financing strategies to ensure that debt maturity structures do not impede their ability to pursue value-enhancing investments. A more flexible and balanced maturity profile allows firms to take advantage of growth prospects without being constrained by immediate liquidity pressures. This underscores the need for dynamic debt management policies that adapt to the firm's stage of growth.

4.3.5 The Effect of Educational background diversity on Investment Efficiency Moderated by Growth Opportunity

Growth opportunity also moderates the positive relationship between educational background diversity and investment efficiency, as indicated by the interaction coefficient of –0.026646 with a probability value of 0.0006. In high-growth environments, managers are often required to accelerate decision-making processes to meet market demands. This urgency limits the extent to which the cognitive benefits of educational background diversity can be fully leveraged, particularly when rapid judgments are needed. The pressure to execute projects swiftly reduces the opportunity for in-depth deliberation and comprehensive evaluation, thereby diminishing the positive influence typically attributed to diverse educational backgrounds.

Despite this moderating effect, educational background diversity remains an important strategic asset. However, its contribution becomes more conditional in fast-paced settings. When firms face high levels of growth pressure, the challenge lies in managing diverse perspectives effectively while maintaining the agility required to respond to emerging opportunities. Firms may need to adopt structured decision-making processes or allocate specialized roles to ensure that the benefits of diversity are not lost amidst the demand for rapid execution. Thus, the findings indicate that educational background diversity is most effective when firms strike a balance between thorough deliberation and swift strategic responsiveness. Properly managed, such diversity can continue to support investment efficiency even in complex, growth-intensive environments.

4.3.6 The Effect of Gender Diversity on Investment Efficiency Moderated by Growth Opportunity

The results also show that growth opportunity significantly moderates the relationship between gender diversity and investment efficiency, with an interaction coefficient of 0.073197 and a probability value of 0.0000. In firms experiencing strong growth prospects, gender diversity becomes more influential as female managers often contribute cautious, multidimensional, and detail-oriented perspectives that enhance the quality of project evaluation. These perspectives complement the demands of high-growth environments, where firms must balance the pursuit of expansion with prudent risk management. The moderating effect indicates that gender diversity strengthens investment efficiency precisely when the complexity of decision-making increases.

Furthermore, in growth-oriented firms, strategic decisions typically involve larger investments and higher levels of uncertainty, making the integration of diverse viewpoints particularly valuable. Female managers tend to introduce more thorough deliberation and risk-awareness, which can mitigate overoptimism and prevent poor investment choices. As a result, gender diversity becomes an organizational advantage in dynamic environments where investment decisions carry significant long-term implications. The findings suggest that firms with strong growth prospects may benefit substantially from fostering gender diversity in managerial roles, as such diversity enhances objectivity, reduces bias in project evaluation, and supports more accurate capital allocation.

5 Conclusion

The study, which involved 108 observations of companies consistently included in the JII70 index during the 2021–2024 period, indicates that investment efficiency is strongly influenced by funding structure, managerial characteristics, and the firms' growth opportunities. Debt maturity was found to have a significant negative impact on investment efficiency, whereas managerial educational background diversity contributed positively and significantly. In contrast, gender diversity did not exhibit a significant partial effect. The moderating role of growth opportunity revealed an interesting dynamic: it intensified the negative impact of debt maturity, weakened the influence of educational background diversity, and reinforced the contribution of gender diversity to investment efficiency. Overall, the research model explains the variation in investment efficiency very well, as reflected by an Adjusted R^2 of 93.14%. These findings underscore the importance of considering internal company factors and growth opportunity conditions in maintaining the quality of investment decision-making.

Aligned with these findings, researchers should ensure that data collection and measurement processes are conducted consistently and accurately, particularly regarding the calculation of debt maturity ratios, Blau indices for education and gender, and growth opportunity variables, to maintain the validity and reliability of the analysis. For future studies, the inclusion of additional variables, expansion of the sample scope, or the use of alternative analytical approaches could further strengthen understanding of investment efficiency. Moreover, for the companies under study, the results imply that managing a balanced debt structure, enhancing managerial educational background diversity, and carefully mapping growth opportunities are essential for supporting more effective and competitive investment decision-making. These steps are expected to help firms sustain investment efficiency while remaining responsive to evolving business growth dynamics.

References

Andika Supra Nathaniel, S. B. B. (2019). terminan Efisiensi Investasi Perusahaan Publik di IndonesiaDe, *17*(2), 1–23.

Anggraeni, L. R., & Widati, L. W. (2022). Pengaruh Leverage , Likuiditas , Profatibilitas , Konservatisme dan Ukuran Perusahaan terhadap Kualitas Laba, *6*(November 2019), 336–347.

Apriyana. (2016). PORTOFOLIO INVESTASI DI DANA PENSIUN PEMBERI KERJA (DPPK).

Arumdari, T. O. (2019). Pengaruh Kualitas Pelaporan Keuangan Dan Debt Maturity Terhadap Efisiensi Investasi Pada Perusahaan Manufaktur Di Bursa Efek Indonesia Periode 2012-2017. Retrieved from http://repository.unair.ac.id/id/eprint/86576

Bawono, A., & Shina, A. F. I. (2018). *Ekonometrika Terapan Untuk Ekonomi dan Bisnis Islam Aplikasi dengan Eviews*. *LP2M IAIN Salatiga*.

Chandra, M. A., & Sari, D. P. (2022). Pengaruh Dewan Komisaris Independen, Diversitas Manajerial, Dan Koneksi Politik Terhadap Efisiensi Investasi. *Jurnal Ilmiah Mahasiswa Akuntansi*, *11*(2), 96–109. https://doi.org/10.33508/jima.v11i2.4570

Chen, F., Hope, O. K., Li, Q., & Wang, X. (2010). Financial reporting quality and investment efficiency of private firms in emerging markets. *Accounting Review*, *86*(4), 1255–1288. https://doi.org/10.2308/accr-10040

Chosiah, R. (2020). Pengaruh Corporate Governance Terhadap Pengungkapan Internet Financial Reporting dengan Profitabilitas Seagai Variabel Intervening pada Bank Umum Syariah Periode 2014-2018.

Cutillas, M. F., & Sánchez, J. P. (2012). serie Financial reporting quality , debt.

Dinda Kurniati, Tri Darma Rosmala Sari, Dwi Tirta Kencana, & Shiwi Angelica Cindiyasari Sihono. (2023). Pengaruh Konservatisme Akuntansi Dan Debt Maturity Terhadap Efisiensi Investasi Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Tahun 2019-2021. *Jurnal Ekonomi Bisnis Dan Akuntansi*, *3*(3), 254–268. https://doi.org/10.55606/jebaku.v3i3.2901

Fajriani, A., Wijaya, S. Y., & Widyastuti, S. (2021). Determinasi Efisiensi Investasi. *Konferensi Riset Nasional Ekonomi, Manajemen, Dan Akuntansi*, *2*, 1541–1554.

Firmansyah, A., Fasita, E., Jadi, P. H., & Febrian, W. (2022). Financial Reporting Quality, Tax Avoidance, Debt Maturity, and Investment Efficiency: The Moderating Role of Corporate Social Responsibility Disclosure. *Jurnal Dinamika Akuntansi Dan Bisnis*, *9*(1), 51–72. https://doi.org/10.24815/jdab.v9i1.23676

Fransiska, E. &, & Alit Triani, N. nyoman. (2017). Pengaruh Konservatisme Akuntansi Dan Debt Maturity Terhadap Efisiensi Investasi. *Jurusan Akuntansi, Fakultas Ekonomi, Universitas Negeri Surabaya*. Retrieved from http://dx.doi.org/10.1016/j.tws.2012.02.007

Fransiska, E., & Triani, N. N. A. (2019). Pengaruh Konservatisme Akuntansi dan Debt Maturity terhadap Efisiensi Investasi. *Jurnal Akuntansi AKUNESA*, *7*(1), 1–20. Retrieved from https://ejournal.unesa.ac.id/index.php/jurnal-akuntansi/article/view/29117

Gusmawan, F., & Novita, N. (2017). Kualitas Pelaporan Keuangan, Diversitas Manajerial dan Efisiensi Investasi. *Jurnal Ekonomi, Manajemen Dan Perbankan (Journal of Economics, Management and Banking)*, *3*(2), 56. https://doi.org/10.35384/jemp.v3i2.202

Hilmi, H., & Aini, N. (2023). Pengaruh Debt Maturity, Leverage, Kebijakan Dividen dan Cash Holding Terhadap Kinerja Keuangan Pada Perusahaan Sektor Aneka Industri yang Terdaftar di Bursa Efek Indonesia Tahun 2018-2021. *Jurnal Akuntansi Malikussaleh (JAM)*, *1*(2), 292. https://doi.org/10.29103/jam.v1i2.8820

Jamaludin Iskak, C. A. (2020). Pengaruh Profitabilitas, Leverage, Growth Opportunities, Dan Firm Size Terhadap Earning Response Coefficient. *Jurnal Paradigma Akuntansi*, *2*(3), 1286. https://doi.org/10.24912/jpa.v2i3.9556

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, *3*, 305–360. https://doi.org/10.1017/CBO9780511817410.023

Marsya, M., & Dewi, R. (2022). Pengaruh Kualitas Laporan Keuangan, Debt Maturity, dan Kinerja Profitabilitas Terhadap Efisiensi Investasi. *Neraca Keuangan : Jurnal Ilmiah Akuntansi Dan Keuangan*, *17*(1), 43–53. https://doi.org/10.32832/neraca.v17i1.6916

Novyarni, N., Christiantoro, D., Harni, R., Tinggi, S., Ekonomi, I., & Al-aitaam, U. S. (2023). Effect of Working Capital , Debt Maturity , Sales and Tangibility on Investment Efficiency Listed on the Indonesia Stock Exchange (IDX) for the 2019-2021 Period, *1*.

Pratama, B., & Jayusman, F. (2022). The Effect of Debt Maturity on Investment Efficiency in Manufacturing Companies Listed on the Indonesia Stock Exchange. *Jurnal Multidisiplin Madani (MUDIMA)*, *2*(1), 91–98. Retrieved from https://journal.yp3a.org/index.php/mudima/index

Rokhilla Haris Lubis, N., Syahyunan, S., & Fauzan Azhmy, M. (2021). Pengaruh Keberagaman Dewan Direksi Terhadap Kinerja Keuangan Pada Perusahaan Manufaktur. *Inovatif: Jurnal Ekonomi, Manajemen, Akuntansi, Bisnis Digital Dan*

Kewirausahaan, *1*(2), 107–125. https://doi.org/10.55983/inov.v1i2.7

Saleh Al-Radaideh, I., & Ibrahim, D. H. (2023). Firm Life Cycle and Investment Efficiency in the MENA Region: Comparative Study of Oil Exporting and Oil-Importing Countries. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *13*(3), 556–568. https://doi.org/10.6007/ijarafms/v13-i3/19342

Sandiar. (2012). Growth Opportunity dalam Memoderasi Pengaruh Leverage dan Debt Maturity terhadap Keputusan Investasi, *5*(12). Retrieved from https://ijefm.co.in/v5i12/Doc/6.pdf

Suaidah, R., & Sebrina, N. (2020). Pengaruh Kualitas Pelaporan Keuangan Dan Tingkat Jatuh Tempo Utang Terhadap Efisiensi Investasi (Studi Empiris pada Perusahaan Manufaktur yang Terdaftar di BEI Tahun 2015-2017. *Jurnal Eksplorasi Akuntansi*, *2*(2), 2693–2710. https://doi.org/10.24036/jea.v2i2.240

Zaky, A. H., & Hendrawati, E. (2025). Efisiensi Investasi : Pengaruh Pengungkapan Environmetal , Social and Governace (ESG), Debt Maturity dan Kualitas Laporan Keuangan.