Capital Structure Determinants in Technology vs. Non-Technology Firms on the Indonesia Stock Exchange

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ABSTRACT

Rapid digitalization has fundamentally transformed business models, investment patterns, and financing decisions, prompting firms to reassess how they structure and manage capital in an increasingly technology-driven environment. This study aims to analyze the determinants of corporate capital structure in the digital era and compare the influence of these factors between technology-based and non-technology companies listed on the Indonesia Stock Exchange. The study uses a quantitative explanatory approach with secondary data from companies' annual financial reports for the period 2018–2023. The analysis was conducted using multiple regression to examine the influence of each determinant and the differences in patterns between the two groups of companies. The results show that asset tangibility has a significant positive effect on the debt-to-equity ratio in both groups, while profitability has a significant negative effect, consistent with the pecking order theory. Company size is only significant in non-technology companies, while growth and liquidity show different influences between the groups. These findings confirm that the characteristics of the digital industry, particularly the dominance of intangible assets and high capital requirements for innovation, influence capital structure policies differently from traditional industries, providing important empirical insights for financial managers and capital market stakeholders in Indonesia.

Keywords: *Capital Structure, Financial Determinants, Non-Tech Firms, Technology Firms.*

INTRODUCTION

The rapid development of digitalization and technological transformation has led to fundamental changes in corporate financing patterns and financial management. Technology-based companies, which generally have a high proportion of intangible assets, relatively short investment cycles, and substantial capital requirements for innovation and expansion, face significantly different financing challenges compared to non-technology companies that rely more on tangible assets and stable business models (Warner & Wäger, 2019). In this context, capital structure as a representation of the balance between debt and equity, is a crucial strategic aspect to analyze, as decisions regarding capital structure not only reflect a company's strategy in selecting funding sources but also indicate how the company manages financial risk, maintains investment flexibility, and exploits growth opportunities amidst the dynamics and competition of the digital economy (DiMasi et al., 2016; Frank et al., 2019).

Corporate finance studies have widely examined the determinants of capital structure to understand how firms balance debt and equity. Prior research highlights key internal factors such as profitability, firm size, asset tangibility, liquidity, growth opportunities, and non-debt tax shields as common predictors of leverage decisions (Oktavina et al., 2018; Panjaitan et al., 2023; Oktaviani et al., 2024). Evidence from Indonesian

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manufacturing and property sectors shows mixed results, with several studies finding that tangibility, size, and profitability significantly shape financing patterns (Susanti et al., 2023; Putri & Dwiarti, 2024). However, other findings by Marlina and Dahlia (2020) indicate that sales growth does not always have a consistent influence on capital structure, suggesting that leverage determinants may differ depending on industry characteristics and business risk conditions. This complexity underscores the need for contextual analysis, particularly when comparing technology and non-technology firms, as funding strategies must adapt to sector-specific characteristics and managerial decisions (Erevelles et al., 2016; Andoni et al., 2019).

Although capital structure research is extensive, most studies still concentrate on traditional sectors such as manufacturing, property, and finance, while evidence on technology-based firms in developing countries like Indonesia remains limited. Recent work addressing this gap shows that asset tangibility and non-debt tax shields have a significant negative effect on leverage measured by the Debt-to-Equity Ratio (DER), whereas profitability and firm size are not significant determinants (Wamba et al., 2017). These results highlight that technology firms exhibit distinctive financing patterns due to the dominance of intangible assets, greater reliance on internal funds for innovation, and rapid investment dynamics. Consequently, capital structure decisions in digital businesses require more flexible and adaptive strategies, underscoring the need for further empirical research on financial behavior in emerging market technology ecosystems (Hanelt et al., 2021).

International evidence suggests that the determinants of capital structure in technology-based firms differ substantially from those in conventional companies. Innovation-driven firms emphasize liquidity, firm age, and investment intensity as key drivers of financing decisions, reflecting distinctive patterns that deviate from traditional corporate models (Schumacher et al., 2016). Understanding these patterns requires industry-adaptive approaches that account for asset composition, innovation funding needs, and sensitivity to economic changes (Gomber et al., 2018). In the context of Indonesia, where economic growth, industrial structures, and capital market dynamics differ from developed economies, direct generalization of international findings is limited (Akter et al., 2016; Makridakis, 2017). This study employs a quantitative explanatory design using secondary data from financial statements of firms listed on the Indonesia Stock Exchange (IDX), applying multiple regression and panel data techniques to assess causal relationships and compare technology-based and non-technology firms. Digital firms face unique funding conditions due to intangible assets and innovation-oriented capital needs, making this analysis critical for understanding corporate financing behavior in emerging markets (Xie et al., 2019; Horváth & Szabó, 2019). The purpose of this study is to identify the main determinants of capital structure decisions in the digital era and to emphasize industry-specific differences in the Indonesian capital market.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Profitability on Capital Structure

Capital structure in this study is measured through leverage indicators such as the debt-to-equity ratio, while the independent variables include profitability, firm size, asset tangibility, growth, liquidity, and other factors widely examined in prior research. Among these determinants, profitability reflects a firm's ability to generate earnings from its operational activities through the effective use of its assets. Higher profitability indicates a stronger capacity to create returns for shareholders and provides firms with greater internal financial resources (Panjaitan et al., 2023). As a result, profitable companies are generally less dependent on external debt financing because they can rely on retained earnings to fund operations and future investments. Putri and Dwiarti (2024) emphasize that increases in profitability encourage firms to prioritize internal funding over borrowing. This aligns with the view that companies must carefully balance internal and external financing sources to achieve an optimal capital structure that maximizes firm value while minimizing financing costs (Oktavina et al., 2018).

The relationship between profitability and capital structure has been widely discussed in prior studies, although empirical findings vary. Susanti et al. (2023) found that profitability has a significant effect on capital structure, suggesting that firms' profit performance influences their financing decisions. However, profitable firms may not always allocate earnings as operational funding, indicating that the impact of profitability can differ depending on managerial policies. In contrast, Susanti et al. (2022) argued that higher profitability can increase leverage, since firms with strong earnings are viewed as less risky by lenders and have a greater ability to meet interest obligations. This condition encourages creditors to provide more debt financing, leading to a positive association between profitability and leverage. Profitability remains a key determinant of capital structure decisions.

H1: Profitability has a significant effect on capital structure.

The Effect of Firm Size and Sales Growth on Capital Structure

Firm size is commonly used to describe the scale and complexity of a company, which can be reflected through indicators such as total asset value and market value (Oktaviani et al., 2024). Larger firms generally possess greater market capitalization, higher book value, and stronger profit potential compared to smaller firms (Ghofir & Yusuf, 2020). In capital structure theory, firm size is often associated with differences in access to external financing, risk perception, and borrowing capacity. Large companies may benefit from easier access to debt markets because they are considered more stable and diversified. However, empirical evidence does not always show a positive relationship. Studies by Kurshev and Strebulaev (2015) as well as Bhat et al. (2023) found that the intertemporal relationship between leverage and firm size tends to be negative, indicating that larger firms may rely less on debt over time due to stronger internal funding capacity.

In addition to firm size, sales growth is another important determinant of capital structure. Sales growth reflects the level of demand and competitiveness of a firm within its industry, and high growth often signals increasing income and improved financial prospects (Iskandar, 2021). Firms experiencing rapid sales expansion may require additional funding to support operational needs and business development. Purba et al. (2020) explained that debt can stimulate profit growth and improve asset turnover, which may contribute to higher sales growth. Nevertheless, excessive debt levels may increase financial risk, particularly in short-term financing, potentially threatening the firm's stability. Therefore, companies must manage leverage carefully to sustain growth while maintaining financial survival. Supporting this relationship, Triyono et al. (2020) found that sales growth has a significant effect on capital structure, emphasizing its role in shaping corporate financing decisions.

H2: Firm size has a significant effect on capital structure.
H3: Sales growth has a significant effect on capital structure.

The Effect of Assets Tangibility and Liquidity on Capital Structure

Asset tangibility and liquidity are widely recognized as important determinants of a firm's capital structure decisions. Tangible assets refer to physical resources such as land, buildings, machinery, and construction in progress that are utilized over a long period in business operations (Nasution et al., 2017). These assets play a strategic role in financing because they can be pledged as collateral to creditors, reducing the risk faced by lenders. Firms with a higher proportion of tangible assets are therefore more likely to obtain long-term debt financing. Supporting this argument, Harc (2015) found that tangible assets have a positive impact on long-term debt, as they provide a strong signal to financial institutions that assets can be liquidated in the event of bankruptcy. This suggests that asset tangibility increases borrowing capacity and encourages firms to rely more on debt as part of their capital structure.

Liquidity, on the other hand, reflects a company's ability to meet short-term obligations smoothly and on time by utilizing current assets such as cash, receivables, and inventory (Marlina & Dahlia, 2020). High liquidity indicates that a firm has sufficient internal resources available, which may reduce the need for external debt financing. Empirical evidence supports this relationship, as Putri and Dwiarti (2024) reported that liquidity has a significant and negative impact on capital structure. When firms possess strong liquidity positions, they tend to rely less on borrowing because their current assets exceed their liabilities that must be settled. This finding aligns with the argument of Afinindy et al. (2021), who explained that companies with high liquidity prefer using internal funds first to finance investments before seeking external financing through debt. Liquidity acts as a limiting factor for leverage, while tangible assets strengthen a firm's ability to obtain debt financing.

H4: Asset tangibility has a significant effect on capital structure.
H5: Liquidity has a significant effect on capital structure.

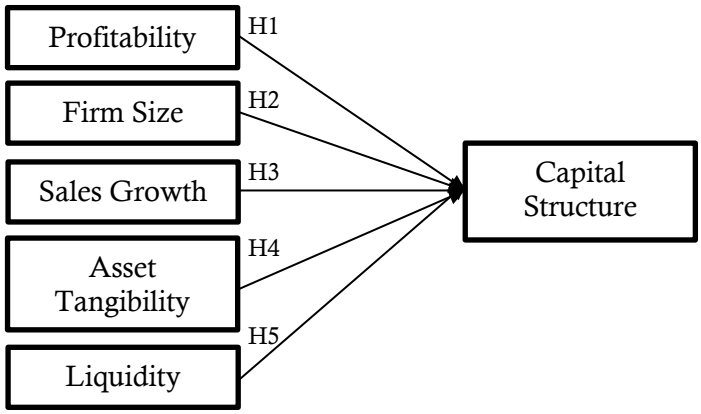

Figure 1. Conceptual Framework

This study's research framework analyzes the factors influencing capital structure by considering firm-specific financial characteristics. Capital structure is the dependent variable, while profitability, firm size, sales growth, asset tangibility, and liquidity are the independent variables. Profitability is expected to significantly affect capital structure (H1), indicating whether firms rely more on internal funds or external debt. Firm size (H2) and sales growth (H3) are also hypothesized to influence financing decisions, as larger and growing firms may face different funding needs and access to capital. Asset tangibility (H4) is proposed to affect capital structure because tangible assets can be used as collateral. Lastly, liquidity (H5) is expected to play a role, since firms with stronger short-term financial capacity may depend less on debt financing.

RESEARCH METHODS

A quantitative explanatory approach was used in this research to analyze the capital structure determinants in technology-based and non-technology companies listed on the IDX. This approach was chosen because it allows testing the causal relationship between independent variables and the dependent variable. The independent variables were profitability, size of company, growth, tangibility of assets, and liquidity. Then, the dependent variable was the structure of capital (Debt to Equity Ratio – DER). This method also supports the collection of findings that can be replicated and retested, thus ensuring the reliability of the study (Mikalef & Pateli, 2017).

All companies listed on IDX during the 2018–2023 period became the population of this research. Clearly, the analysis units were being companies grouped into technology and non-technology categories according to the IDX industry classification. A purposive sampling technique was used to define the sample. The criteria were active companies,

having complete annual financial reports, and belonging to one of the industry categories. The data were collected from the companies' officially published annual financial reports, including balance sheets, income statements, and notes to the financial statements, ensuring data consistency and reliability (Buhalis et al., 2019).

Data were collected from secondary sources, specifically audited annual financial reports officially published on the IDX website. Capital structure, as the dependent variable, is measured using the Debt-to-Equity Ratio (DER). The independent variables include profitability measured by Return on Assets (ROA), firm size measured as the natural logarithm of total assets, growth measured by annual sales growth, asset tangibility measured by the ratio of fixed assets to total assets, and liquidity measured by the current ratio. All variables are measured using ratio scales commonly applied in corporate finance research.

The data analysis was conducted using multiple linear regression to examine the influence of independent variables on capital structure and to compare patterns between technology-based and non-technology firms. The analysis was performed using SPSS to ensure accuracy and reliability of the statistical results. This analytical framework enhances methodological rigor, supports robust inference, and ensures the replicability of the findings. The research design provides meaningful contributions to the corporate finance literature and offers practical insights for financial managers and capital market stakeholders in the digital transformation era (McIntyre & Srinivasan, 2017).

RESULTS

This study aims to identify factors influencing corporate capital structure in the digital era and compare the patterns of influence between technology-based and non-technology companies. The data used are derived from the annual financial reports of companies listed on the Indonesia Stock Exchange for the period 2018–2023. The analysis was conducted using multiple regression to examine the influence of independent variables on capital structure and to compare differences in effects across company groups. Table 1 shows the summary of descriptive statistics.

Table 1. Summary of Descriptive Statistics

Variable	Technology Sector		Non-Technology Sector	
	Mean	Dev.	Mean	Std. Dev.
Debt to Equity Ratio (DER)	0.42	0.15	0.56	0.18
Profitability (ROA)	0.08	0.04	0.10	0.05
Firm Size (Ln Total Assets)	15.3	1.2	16.1	1.5
Sales Growth (%)	18.5	7.6	12.4	6.8
Asset Tangibility	0.23	0.12	0.45	0.15
Liquidity (Current Ratio)	2.1	0.8	1.8	0.7

Table 1 presents a summary of descriptive statistics comparing key financial characteristics between technology-based and non-technology-based companies. The results show that technology firms have a lower DER, with an average of 0.42, compared to non-technology firms, which report an average of 0.56, indicating that technology companies tend to rely more on equity financing rather than debt. In terms of profitability, non-technology companies demonstrate a slightly higher ROA, averaging 0.10, while technology firms record an average of 0.08. Firm size is also larger in non-technology companies, with a mean value of 16.1, compared to 15.3 in technology companies. Furthermore, technology firms exhibit stronger sales growth, averaging 18.5%, whereas non-technology firms show a lower growth rate of 12.4%, reflecting the rapid expansion commonly found in digital-based industries. Technology companies also have significantly lower asset tangibility, with a mean of 0.23, consistent with the dominance of intangible assets, while non-technology firms report higher tangibility at 0.45. Liquidity levels are slightly higher in technology firms, with a current ratio of 2.1, compared to 1.8 in non-technology firms, suggesting better short-term financial flexibility.

Table 2. Multiple Regression Results – Technology-Based Companies

Variable	Coefficient	t-statistic	p-value
Profitability (ROA)	-0.31	-2.45	0.018
Firm Size	0.12	1.60	0.112
Sales Growth	-0.15	-1.85	0.069
Asset Tangibility	0.42	3.75	0.001
Liquidity	-0.10	-1.12	0.263
R-Square	0.58		

Table 2 reports the multiple regression results for technology-based companies, with capital structure as the dependent variable. The findings show that profitability has a significant negative effect on capital structure, with a coefficient of -0.31 and a p-value of 0.018. This indicates that more profitable technology firms tend to rely less on debt financing, supporting the argument that internally generated funds reduce the need for external borrowing. Firm size has a positive coefficient of 0.12, but its effect is not statistically significant, as reflected by a p-value of 0.112, suggesting that company size does not strongly influence capital structure decisions in this sector. Sales growth also shows a negative relationship, with a coefficient of -0.15, and is marginally significant at the 10% level, with a p-value of 0.069, indicating that growing firms may slightly reduce leverage, although the effect remains weak.

In contrast, asset tangibility demonstrates the strongest and most significant effect on capital structure, with a positive coefficient of 0.42 and a p-value of 0.001. This suggests that technology companies with higher tangible assets tend to use more debt, as tangible assets can serve as collateral and improve access to external financing. Liquidity, measured by the current ratio, has a negative coefficient of -0.10 but is not statistically significant, with a p-value of 0.263, meaning that liquidity does not play a major role in explaining capital structure variations. The model shows relatively strong explanatory power, with an R-square value of 0.58, indicating that 58% of the variation in capital structure among technology-based firms can be explained by the financial factors included in the regression model.

Table 3. Multiple Regression Results of Non-Technology Companies

Variable	Coefficient	t-statistic	p-value
Profitability (ROA)	-0.28	-3.12	0.003
Firm Size	0.20	2.78	0.007
Sales Growth	-0.05	-0.68	0.500
Asset Tangibility	0.35	4.21	0.000
Liquidity	-0.12	-1.45	0.150
R-Square	0.63		

Table 3 presents the multiple regression results for non-technology companies, with capital structure as the dependent variable. The results indicate that profitability has a significant negative effect on capital structure, with a coefficient of -0.28 and a p-value of 0.003. This suggests that more profitable non-technology firms tend to rely less on debt financing, as they are more capable of using internal funds to support their operations. Firm size shows a positive and significant relationship with capital structure, with a coefficient of 0.20 and a p-value of 0.007, meaning that larger firms in non-technology sectors are more likely to use higher levels of debt, possibly due to greater access to credit markets and stronger financial stability. Sales growth, however, does not significantly influence capital structure, as reflected by its small negative coefficient of -0.05 and a p-value of 0.500.

Asset tangibility remains an important determinant of capital structure, showing a positive and highly significant effect with a coefficient of 0.35 and a p-value of 0.000. This indicates that firms with higher tangible assets tend to increase debt usage, since physical assets can serve as collateral for external financing. Liquidity has a negative coefficient of -0.12, but its effect is not statistically significant, with a p-value of 0.150, suggesting that

liquidity levels do not strongly explain variations in capital structure among non-technology companies. The regression model demonstrates solid explanatory power, with an R-square value of 0.63, meaning that 63% of the variation in capital structure is explained by the independent variables included in the analysis.

The comparison results show that technology companies tend to have lower DER and are more sensitive to changes in asset tangibility, reflecting a reliance on intangible assets and internal financing. In contrast, non-technology companies exhibit a significant effect of firm size on DER, indicating that firm size influences financing decisions more than in traditional industries. Profitability remains a significant negative factor in both groups, consistent with the pecking order theory, which states that profitable companies tend to use internal equity rather than debt.

DISCUSSION

The results indicate that the determinants of capital structure in technology-based and non-technology companies exhibit different patterns of influence, reflecting the unique characteristics of each industry. Asset tangibility is shown to have a significant positive effect on the DER in both groups of companies, although the effect is more pronounced in technology companies. This finding is consistent with Skoogh and Sward (2015), showing that companies with a higher proportion of fixed assets tend to obtain external financing more easily, thus increasing the use of debt in their capital structure. In technology companies, despite the relatively low proportion of fixed assets, the high sensitivity to tangibility suggests that any increase in tangible assets can be an indicator of creditor confidence in providing financing. This confirms that physical assets continue to play an important role as collateral, even in industries where the majority of assets are intangible (Blut et al., 2021).

Profitability has been shown to have a significant negative effect on the Debt-to-Equity Ratio (DER) for both groups of companies, consistent with the pecking order theory. Companies with higher profitability tend to utilize retained earnings to finance their investment activities, thereby reducing their reliance on external debt (Oktavina et al., 2018). This pattern is consistent across both technology-based and non-technology companies, although technology companies generally exhibit lower DER. This finding supports previous research by De' et al. (2020) that emphasizes that innovative companies with high growth rates tend to prioritize internal financing to maintain financial flexibility and minimize the risk of high interest expenses resulting from debt use.

Firm size is shown to have a significant effect on the DER only for non-technology companies, while the effect is insignificant for technology companies. This suggests that firm size is more relevant in the context of traditional industries, where greater operational capacity and reputation facilitate access to debt financing. In contrast, technology companies, which tend to rely on intangible assets and innovation as primary resources, are less influenced by firm size in determining their capital structure. Furthermore, sales growth and liquidity variables show different patterns of influence between the two groups, confirming that the characteristics of the digital industry, including rapid investment dynamics and the dominance of intangible assets, form more complex financing patterns compared to traditional industries (Grover et al., 2018).

The results of this study emphasize the importance of considering industry context when analyzing a company's capital structure. Technology-based companies in the digital era face unique challenges in balancing debt and equity, primarily due to the dominance of intangible assets and the substantial capital requirements to support innovation. In contrast, non-technology companies still exhibit traditional patterns, where company size and asset tangibility are the primary factors in capital structure decisions. Industry characteristics are a crucial aspect in capital structure studies and provide practical guidance for financial managers in designing optimal funding strategies in the Indonesian capital market (Kannan & Li, 2017; El-Kassar & Singh, 2019; Granić & Marangunić, 2019; Wang et al., 2019).

CONCLUSION

The conclusion of this study shows that the determinants of corporate capital structure in the digital era are influenced differently by industry characteristics. Asset tangibility remains a significant factor for both groups of companies, but its influence is stronger in technology-based companies, while profitability negatively influences DER in both groups, consistent with the pecking order theory. Firm size is only significant in non-technology companies, while growth and liquidity show varying effects, confirming that technology companies face more complex funding dynamics due to the dominance of intangible assets and the need for capital for innovation. These findings imply that managers should design capital structure policies that align with industry-specific asset profiles, particularly by considering the limited collateral value of intangible assets in technology firms. In addition, investors and policymakers should support alternative financing mechanisms for innovation-driven companies, as traditional debt financing may be less suitable in sectors dominated by intangible resources.

The limitations of this study are primarily related to the use of secondary data that only includes annual financial reports, so that more detailed internal company dynamics or external macroeconomic factors are not fully observed, and the multiple regression method may not capture non-linear relationships between variables. For future research, it is recommended to include additional variables such as innovation intensity, capital market conditions, or dynamic panel analysis to enrich the understanding of capital structure determinants, as well as consider qualitative studies to explore managerial behavioral factors not reflected in financial reports.

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REFERENCES

[1] Afinindy, I., Salim, U., & Ratnawati, K. (2021). The effect of profitability, firm size, liquidity, sales growth on firm value mediated capital structure. *International Journal of Business, Economics and Law*, *24*(4), 15-22.

[2] Akter, S., Wamba, S. F., Gunasekaran, A., Dubey, R., & Childe, S. J. (2016). How to improve firm performance using big data analytics capability and business strategy alignment? *International Journal of Production Economics, 182*(1), 113–131.

[3] Andoni, M., Robu, V., Flynn, D., Abram, S., Geach, D., Jenkins, D., McCallum, P., & Peacock, A. (2019). Blockchain technology in the energy sector: A systematic review of challenges and opportunities. *Renewable and Sustainable Energy Reviews, 100*(2), 143–174.

[4] Bhat, D. A., Chanda, U., & Bhat, A. K. (2023). Does firm size influence leverage? Evidence from India. *Global Business Review*, *24*(1), 21-30.

[5] Blut, M., Wang, C., Wünderlich, N. V., & Brock, C. (2021). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI. *Journal of the Academy of Marketing Science, 49*(4), 632–658.

[6] Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., & Hofacker, C. (2019). Technological disruptions in services: lessons from tourism and hospitality. *Journal of Service Management, 30*(4), 484–506.

[7] De', R., Pandey, N., & Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management, 55*(2), 102-115.

[8] DiMasi, J. A., Grabowski, H. G., & Hansen, R. W. (2016). Innovation in the pharmaceutical industry: New estimates of R&D costs. *Journal of Health Economics, 47*(1), 20–33.

[9] El-Kassar, A.-N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change, 144*(2), 483–498.

[10] Erevelles, S., Fukawa, N., & Swayne, L. (2016). Big data consumer analytics and the transformation of marketing. *Journal of Business Research, 69*(2), 897–904.

[11] Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. *International Journal of Production Economics, 210*(1), 15–26.

[12] Ghofir, A., & Yusuf, Y. (2020). Effect of firm size and leverage on earning management. *Journal of Industrial Engineering & Management Research*, *1*(3), 218-225.

[13] Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of Management Information Systems, 35*(1), 220–265.

[14] Granić, A., & Marangunić, N. (2019). Technology acceptance model in educational context: A systematic literature review. *British Journal of Educational Technology, 50*(5), 2572–2593.

[15] Grover, V., Chiang, R. H. L., Liang, T.-P., & Zhang, D. (2018). Creating strategic business value from big data analytics: a research framework. *Journal of Management Information Systems, 35*(2), 388–423.

[16] Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: insights and implications for strategy and organizational change. *Journal of Management Studies, 58*(5), 1159–1197.

[17] Harc, M. (2015). The relationship between tangible assets and capital structure of small and medium-sized companies in Croatia. *Ekonomski Vjesnik/Econviews: Review of Contemporary Business, Entrepreneurship and Economic Issues*, *28*(1), 213-224.

[18] Horváth, D., & Szabó, R. Z. (2019). Driving forces and barriers of industry 4.0: Do multinational and small and medium-sized companies have equal opportunities? *Technological Forecasting and Social Change, 146*(1) 119–132.

[19] Iskandar, D. (2021). The effect of profitability and sales growth on company value moderated by leverage. *International Journal of Management Studies and Social Science Research*, *3*(5), 32-41.

[20] Kannan, P. K., & Li, H. "Alice." (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing, 34*(1), 22–45.

[21] Kurshev, A., & Strebulaev, I. A. (2015). Firm size and capital structure. *Quarterly Journal of Finance*, *5*(3), 155-167.

[22] Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures, 90*(3), 46–60.

[23] Marlina, N. F., & Dahlia, P. (2020). Effect of liquidity, profitability, and sales growth on capital structure. *International Humanities and Applied Sciences Journal*, *3*(2), 1-10.

[24] McIntyre, D. P., & Srinivasan, A. (2017). Networks, platforms, and strategy: Emerging views and next steps. *Strategic Management Journal, 38*(1), 141–160.

[25] Mikalef, P., & Pateli, A. (2017). Information technology-enabled dynamic capabilities and their indirect effect on competitive performance: Findings from PLS-SEM and fsQCA. *Journal of Business Research, 70*(3), 1–16.

[26] Nasution, A. A., Siregar, I., & Panggabean, R. (2017). The effect of profitability, asset tangibility, corporate tax, non-debt tax shield and inflation upon the financial capital structure of the manufacturing companies listed on the Indonesian stock exchange. In *International Conference on Business and Management Research (ICBMR 2017)* (pp. 65-74). Paris: Atlantis Press.

[27] Oktaviani, D., Satriansyah, A., & Widianingrum, E. (2024). The effect of profitability, company size and leverage on company value. *Jurnal Ilmiah Akuntansi Kesatuan*, *12*(2), 207–218.

[28] Oktavina, M., Manalu, S., & Yuniarti, S. (2018). Pecking order and trade-off theory in capital structure analysis of family firms in Indonesia. *Jurnal Keuangan dan Perbankan*, *22*(1), 73-82.

[29] Panjaitan, F. R., Minan, H. K., & Arief, M. (2023). The effect of liquidity, profitability and company size on company valuewith capital structure as an intervening variable in manufacturing companies listed on the IDX in 2016-2020. *International Journal of Economics and Management*, *1*(1), 21-32.

[30] Purba, M. N., Sinurat, E. K. B., Djailani, A., & Farera, W. (2020). The effect of current ratio, return on assets, total asset turnover and sales growth on capital structure in manufacturing company. *International Journal of Social Science and Business*, *4*(3), 489-500.

[31] Putri, A. N., & Dwiarti, R. (2024). The effect of tax avoidance, liquidity, profitability, on capital structure of Indonesia Stock Exchange's listed companies. *Jurnal Ilmiah Akuntansi Kesatuan*, *12*(3), 403–412.

[32] Schumacher, A., Erol, S., & Sihn, W. (2016). A maturity model for assessing industry 4.0 readiness and maturity of manufacturing enterprises. *Procedia CIRP, 52*(3), 161–166.

[33] Skoogh, J., & Sward, P. (2015). T*he impact of tangible assets on capital structure.* Gothenburg: University of Gothenburg (Bachelor's Thesis).

[34] Susanti, M., Dewi, S. P., Sufiyati, S., & Susanto, L. (2022). The effect of sales growth, profitability, and company size on leverage. In *3rd Tarumanagara International Conference on the Applications of Social Sciences and Humanities (TICASH 2021)* (pp. 660-668). Paris: Atlantis Press.

[35] Susanti, S., Widyawati, D., & Iswara, U. S. (2023). The effect of profitability and firm size on capital structure. *Jurnal Ilmiah Akuntansi Dan Keuangan (JIAKu)*, *2*(2), 140-151.

[36] Triyono, T., Kusumastuti, A., & Palupi, I. D. (2019). The influence of profitability, assets structure, firm size, business risk, sales growth, and dividend policy on capital structure. *Riset Akuntansi Dan Keuangan Indonesia*, *4*(3), 101-111.

[37] Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research, 70*(2), 356–365.

[38] Wang, Y., Han, J. H., & Beynon-Davies, P. (2019). Understanding blockchain technology for future supply chains: a systematic literature review and research agenda. *Supply Chain Management: An International Journal, 24*(1), 62–84.

[39] Warner, K. S. R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326–349.

[40] Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research, 101*(1), 697–706.