

THE DUAL PATHWAY TO TAX STRATEGY: FIRM SIZE AND PROFITABILITY IN TRANSPORTATION AND LOGISTICS SECTOR

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Abstract

This study aimed to examine the effect of capital intensity, institutional ownership, and liquidity on tax management, with firm size as a moderating variable and profitability as a mediating variable, in transportation and logistics companies listed on the Indonesia Stock Exchange during the 2021–2024 period. The study employed a quantitative approach with an associative-causal design. The population consisted of transportation and logistics companies, and a sample of 14 companies was selected through purposive sampling, resulting in 70 observations over five years. Secondary data were collected from financial statements and annual reports. The data were analyzed using panel data regression with the Common Effect Model, classical assumption tests, and the Sobel test for mediation. The results showed that capital intensity had a significant negative effect on tax management, with a regression coefficient of -9.197 and a significance value of 0.012 . Institutional ownership had a significant negative effect, with a regression coefficient of -6.794 and a significance value of 0.020 . Liquidity had no significant effect, with a significance value of 0.371 . Firm size significantly moderated the effects of capital intensity and institutional ownership on tax management, with significance values of 0.012 and 0.022 , but did not moderate the effect of liquidity, with a significance value of 0.435 . Profitability mediated the effect of capital intensity on tax management, with a Sobel t-statistic of 2.508 , but did not mediate the effects of institutional ownership and liquidity. The adjusted coefficient of determination indicated that 16.29 percent of the variation in tax management was explained by the model. These findings implied that capital intensity and institutional ownership were key determinants of tax management.

Keywords: Capital Intensity, Institutional Ownership, Liquidity, Firm Size, Tax Management

1. Introduction

Corporate taxes are a vital element of the state budget in developing countries, including Indonesia, serving as the government's main revenue source to finance development, social security, and public services (Doaly et al., 2021). However, the government often faces the challenge of companies trying to lower their tax liability through various tax management strategies. Tax management is defined as a series of efforts to reduce tax liabilities while still adhering to applicable tax regulations, and it may involve taking advantage of allowable exemptions and deductions or deferring tax payments in ways that remain within legal boundaries (Ngadiman & Puspitasari, 2014). In this study, tax management is measured using the effective tax rate (ETR), which



represents the amount of tax that a company actually pays relative to its pre-tax profit. The practice of tax management is strongly linked to agency conflicts that arise from information asymmetry, where the government as the principal expects companies to comply with tax regulations, while companies as agents may act in their own interests by exploiting gaps in tax laws to minimize tax payments (Juliana et al., 2020).

A tax avoidance case happened at PT Mitra Investindo Tbk, a major coal company in Indonesia. Mitra is alleged to have avoided paying taxes by using transfer pricing. The company sold coal to its Singapore-based subsidiary, Coaltrade Services International, at prices lower than the usual market price, and then that coal was sold to other countries at higher prices. This practice occurred from 2009 to 2017 and caused the country to lose approximately IDR 1.94 trillion in taxes that could have been collected, which is roughly IDR 217 million each year. The effective tax rate of PT Mitra Investindo from 2020 to 2024 illustrates the dynamics of tax management in this company, as presented in Table 1.

Table 1. ETR of PT Mitra Investindo for the Period 2020–2024

Year	Description	Income Tax Burden	Profit Before Tax	ETR (%)
2020	In millions of rupiah	7,273,893,571	3,234,723,552	224.87
2021	In millions of rupiah	1,103,749,521	8,121,034,418	13.59
2022	In millions of rupiah	3,502,590,964	18,848,484,834	18.58
2023	In millions of rupiah	10,507,833,358	58,396,574,397	17.99
2024	In millions of rupiah	7,107,109,016	18,491,979,196	38.43

Source: Processed data from financial statements (2025)

Table 1 presents the effective tax rate of PT Mitra Investindo from 2020 to 2024. In 2020, the company's ETR was 224.87 percent, which was far higher than the rates in subsequent years, indicating that the company was not managing its tax obligations efficiently during that period. However, in 2021, 2022, 2023, and 2024, the ETR dropped to 13.59 percent, 18.58 percent, 17.99 percent, and 38.43 percent, respectively. This means the company improved its tax management in the last four years, bringing its effective tax rate closer to or below the statutory rate. Overall, the trend shows that PT Mitra Investindo has made progress in managing taxes more efficiently in recent years, although the variation across years indicates significant fluctuation in tax practices.

Theoretically, capital intensity shows a relationship with tax management through the role of fixed asset investment, which generates large depreciation costs, thereby reducing taxable income. The share of fixed assets relative to total assets of a corporation is known as capital intensity, and depreciation is a deductible expense for businesses that choose to invest in fixed assets, which lowers the business's tax obligation (Nasution & Mulyani, 2020). Previous studies have shown mixed results, with some finding a significant negative effect (Praditasari & Setiawan, 2019), while others found no significant effect (Rizky & Andriani, 2021).

Liquidity reflects a company's ability to meet its short-term obligations as they mature (Kasmir, 2013). According to Niariana and Anggraeni (2022), this ability can be assessed using liquidity ratios. Low liquidity indicates that a company may face difficulties in



settling its short-term liabilities, whereas high liquidity reflects a healthy financial condition, showing that the company can meet its obligations on time. Liquidity also influences the tendency to engage in tax management (Puspitasari, 2019). However, research results still vary, with some studies finding significant effects and others reporting no relationship.

A system, procedure, and framework known as corporate governance governs amicable interactions between managers, owners, shareholders, and other stakeholders. It emphasizes the significance of carrying out obligations to shareholders and other stakeholders and is used to guide, manage, and regulate a corporation in order to improve transparent commercial progress and corporate accountability. Businesses that have put solid corporate governance into place will undoubtedly see improvements in their operational operations as well as an increase in the effectiveness and efficiency of their performance for stakeholders, including when it comes to choosing their tax policies. Agency theory, which contends that firm management must be appropriately watched over and managed to guarantee that managers (agents) do their jobs efficiently, has given rise to a variety of interpretations of corporate governance.

Furthermore, good corporate governance, measured through institutional ownership, can control opportunistic management behavior in tax avoidance. Institutional ownership influences company policy, with majority share ownership including tax management policy aimed at optimizing tax payments (Inviolita et al., 2022). Institutional parties that control a larger share than other shareholders can exercise greater oversight of management policy, thereby encouraging management to avoid behavior that is detrimental to shareholders. Research by Sari and Martani (2010) found that GCG suppresses tax avoidance practices, but other studies show no significant effect (Putri & Rahmawati, 2020). Due to the fact that many businesses have been revealed by the tax authorities for engaging in fraudulent tax management, which can lead to tax penalties that can be harmful to the business, poor management of tax responsibilities can have a highly negative effect on enterprises.

The urgency of this research is driven by several critical factors. First, corporate taxes are a vital element of the state budget in developing countries, yet the government often faces the challenge of companies trying to lower their tax liability through various tax management strategies. Second, a tax avoidance case at PT Mitra Investindo Tbk involving transfer pricing caused approximately IDR 1.94 trillion in lost tax revenue between 2009 and 2017, highlighting the importance of understanding the determinants of tax management in the transportation and logistics sector. Third, empirical evidence regarding capital intensity, institutional ownership, and liquidity on tax management remains inconclusive, with some studies reporting significant effects and others reporting insignificant or no relationship. Fourth, the moderating role of firm size and the mediating role of profitability in these relationships remain underexplored, with contradictory findings in prior research. Fifth, the transportation and logistics sector during the 2021–2024 period represents a unique context characterized by post-pandemic recovery, supply chain disruptions, and evolving tax regulations, yet empirical evidence on the determinants of tax management in this sector remains limited.

Previous research has shown significant but fragmented findings regarding the determinants of tax management. Studies have demonstrated that capital intensity significantly influences tax management (Praditasari & Setiawan, 2019; Pratama & Febrianti, 2022), that institutional ownership affects tax management (Putri & Astuti, 2022; Sari & Suardana, 2023), and that liquidity influences tax management (Rahmawati,



2021; Santoso & Dewi, 2022). However, other studies have reported contradictory findings, indicating that capital intensity does not significantly affect tax management (Rizky & Andriani, 2021), that institutional ownership has no significant effect (Yuliana, 2021), and that liquidity has no significant relationship with tax avoidance practices (Santoso & Dewi, 2022). Furthermore, the moderating role of firm size and the mediating role of profitability also remain inconclusive, with some studies finding significant effects and others reporting no relationship (Sari & Suardana, 2023; Putra & Sihombing, 2022; Wijaya, 2022; Putri & Astuti, 2022). These inconsistencies suggest that the relationships among capital intensity, institutional ownership, liquidity, firm size, profitability, and tax management remain underexplored, particularly in the context of transportation and logistics companies in Indonesia.

The research gap in this study lies in the limited understanding of how capital intensity, institutional ownership, and liquidity jointly influence tax management, particularly in the transportation and logistics sector in Indonesia. While individual studies have examined the direct effects of these factors on tax management, the integrated framework connecting these factors with firm size as a moderating variable and profitability as a mediating variable remains underexplored. Additionally, most previous studies have focused on various sectors or other periods, leaving a significant gap in knowledge regarding the dynamics of tax management in transportation and logistics companies during the 2021–2024 period. Furthermore, empirical evidence on the determinants of tax management in Indonesia remains limited, particularly in the context of increasing economic uncertainty and evolving governance practices.

The novelty of this research lies in several aspects. First, this study focuses on transportation and logistics companies listed on the Indonesia Stock Exchange during the 2021–2024 period, representing a unique context characterized by post-pandemic recovery, supply chain disruptions, and evolving tax regulations. Second, this study develops an integrative model that simultaneously examines the influence of capital intensity, institutional ownership, and liquidity on tax management, with firm size as a moderating variable and profitability as a mediating variable, providing a more comprehensive understanding of the determinants of tax management in the transportation and logistics sector. Third, this study contributes to the limited empirical evidence on tax management in the transportation and logistics sector, providing insights into how financial ratios, governance mechanisms, firm size, and profitability collectively influence tax management. Fourth, this study extends the application of Agency Theory to the context of tax management in Indonesia, validating theoretical predictions in an under-researched institutional context. Fifth, this study provides actionable insights for investors, policymakers, tax authorities, and company management in designing effective strategies to enhance tax compliance and governance practices.

The purpose of this study is to examine the effect of capital intensity, institutional ownership, and liquidity on tax management in transportation and logistics companies listed on the Indonesia Stock Exchange during the 2021–2024 period, with firm size as a moderating variable and profitability as a mediating variable. Specifically, this research aims to analyze the effect of capital intensity on tax management, analyze the effect of institutional ownership on tax management, analyze the effect of liquidity on tax management, analyze the moderating role of firm size in these relationships, and analyze the mediating role of profitability in these relationships. The choice of this goal was driven by the limited understanding of how these factors collectively influence tax management and the need for empirical evidence that can inform investors, policymakers,



tax authorities, and company management in designing effective strategies to enhance tax compliance and governance practices.

The contribution of this research is multifaceted. From a theoretical perspective, this research contributes to the enrichment of literature on taxation and corporate governance by proposing and testing an integrative model that links capital intensity, institutional ownership, and liquidity with tax management, incorporating firm size as a moderating variable and profitability as a mediating variable, extending the application of Agency Theory to the context of tax management in Indonesia. The findings contribute to the understanding of how financial ratios, governance mechanisms, firm size, and profitability influence tax management, providing a more nuanced theoretical framework for analyzing tax practices in the transportation and logistics sector. From a practical perspective, this study provides actionable insights for investors, policymakers, tax authorities, and company management in assessing and managing tax risk. For investors, the findings provide guidance on which factors should be considered in evaluating a company's tax management practices. For policymakers and tax authorities, the results offer insights into the factors affecting tax compliance and the importance of governance mechanisms and firm size in shaping tax practices. For company management, the results offer insights into the importance of capital intensity management, institutional oversight, and profitability in maintaining tax compliance and avoiding aggressive tax practices. For academics, this study contributes to the growing body of literature on taxation and corporate governance, providing a foundation for future research on tax management.

2. Theoretical Background

2.1 Agency Theory

Agency Theory explains a contract where the principal (company owner) grants the agent (management) the authority to make operational decisions and perform actions in the owner's name (Jensen & Meckling, 1976). The practice of tax management is strongly linked to agency conflicts that arise from information asymmetry. In this context, the government, as the principal, expects companies to comply with tax regulations and fulfill their obligations, while companies, as agents, may act in their own interests by exploiting gaps in tax laws to minimize tax payments through various tax management strategies (Juliana et al., 2020). In this study, capital intensity, institutional ownership, liquidity, firm size, and profitability function as monitoring mechanisms and signals that reduce agency conflicts and information asymmetry between management and shareholders. Within the Agency Theory framework, capital intensity reflects investment decisions that may be used to reduce taxable income through depreciation, while institutional ownership strengthens oversight and encourages compliance with tax regulations. Liquidity reflects financial stability that may influence tax management decisions, firm size reflects the scale of operations and resources available for tax planning, and profitability reflects financial performance that connects governance and financial factors to tax management. Accordingly, Agency Theory provides the theoretical foundation for this study by explaining how capital intensity, institutional ownership, liquidity, firm size, and profitability influence tax management.

2.2 Tax Management

Tax management is defined as a series of efforts to reduce tax liabilities while still adhering to applicable tax regulations. These efforts may involve taking advantage of allowable exemptions and deductions or deferring tax payments in ways that remain



within legal boundaries. Ngadiman and Puspitasari (2014) describe tax management as actions taken by taxpayers to minimize or even eliminate their tax obligations without violating existing tax laws and regulations. Since many businesses have been found to have engaged in fraudulent tax management by the tax authorities, poor management of tax obligations can have a highly negative effect on businesses. This can lead to tax penalties that can be harmful to the business. Companies use tax management as a tactic to attain income tax efficiency by correctly and legally meeting their tax obligations. From the perspective of Agency Theory, tax management is strongly linked to agency conflicts that arise from information asymmetry between management and shareholders (Jensen & Meckling, 1976). In this study, tax management is measured using the effective tax rate (ETR), which compares income tax expense to profit before tax. A lower ETR indicates more aggressive tax management, while an ETR closer to the statutory tax rate indicates better compliance. Empirical studies also support this relationship, with studies by Mappadang et al. (2022) and Sevtianti et al. (2024) finding that tax management is influenced by financial ratios and governance mechanisms.

2.3 Capital Intensity

Fixed asset intensity indicates the degree of investment a company makes in tangible assets to sustain its operational performance. The higher the fixed asset intensity, the greater the company's investment in such assets (Nasution & Mulyani, 2020). According to PSAK No. 16 of 2018, fixed assets are physical resources employed to obtain or send goods and services, rented to third parties, or used for administrative functions, and have a useful life extending beyond one accounting period. The share of fixed assets relative to total assets of a corporation is known as capital intensity. Depreciation is a deductible expense for businesses that choose to invest in fixed assets, which lowers the business's tax obligation. From the perspective of Agency Theory, management exploits this to boost productivity and legally lower tax obligations, which lowers the ETR (Jensen & Meckling, 1976). In this study, capital intensity is measured by the ratio of total fixed assets to total assets. Empirical studies also support this relationship, with a study by Pratama and Febrianti (2022) finding that capital intensity significantly influences tax management.

2.4 Institutional Ownership

Institutional ownership influences company policy, with majority share ownership including tax management policy aimed at optimizing tax payments (Inviolita et al., 2022). Institutional parties that control a larger share than other shareholders can exercise greater oversight of management policy, thereby encouraging management to avoid behavior that is detrimental to shareholders. Dispersed ownership and concentrated ownership are the two forms of ownership seen in Indonesian businesses. Companies with distributed ownership offer management more compensation. Controlling shareholders and minority shareholders are the two types of shareholders in concentrated ownership companies. From the perspective of Agency Theory, an agreement between the management (agent) and the business owner (principal) gives rise to agency relationships (Jensen & Meckling, 1976). Compared to the owner, a manager is undoubtedly more informed about the state of the business. As a result, the manager has a duty to inform the owner. However, there are instances when the information given is asymmetric, meaning it does not accurately depict the state of the business. As a result, a conflict of interest exists between the owner and the management (agent). In this study,



institutional ownership is measured by the proportion of shares held by institutions relative to total shares outstanding. Empirical studies also support this relationship, with studies by Putri and Astuti (2022) and Sari and Suardana (2023) finding that institutional ownership significantly influences tax management.

2.5 Liquidity

Liquidity reflects a company's ability to meet its short-term obligations as they mature (Kasmir, 2013). According to Niariana and Anggraeni (2022), this ability can be assessed using liquidity ratios. Low liquidity indicates that a company may face difficulties in settling its short-term liabilities, whereas high liquidity reflects a healthy financial condition, showing that the company can meet its obligations on time. The level of liquidity can be observed through the amount of current assets, one of which is measured by the current ratio. From the perspective of Agency Theory, liquidity reflects financial stability that may influence tax management decisions (Jensen & Meckling, 1976). Companies with high liquidity may have greater flexibility in managing their tax obligations, while companies with low liquidity may prioritize financial stability over tax optimization. In this study, liquidity is measured using the Current Ratio, which compares current assets to current liabilities. Empirical studies also support this relationship, with studies by Rahmawati (2021) and Santoso and Dewi (2022) finding that liquidity significantly influences tax management.

2.6 Firm Size

Firm size denotes the scale of a company, commonly measured by total assets, sales, number of employees, market value, or capital (Azura, 2020). Larger firms generally achieve higher profits, which also increases their tax obligations. Therefore, effective tax management is crucial. Large companies usually have skilled professionals to manage taxes efficiently, reducing the risk of audits or penalties from tax authorities (Putri & Yanti, 2023). A company's capacity and stability in carrying out its business operations can be inferred from its size. Larger businesses have fewer tax obligations and are more likely to make efficient use of their resources. From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). In this study, firm size is measured by the natural logarithm of total assets. Empirical studies also support this relationship, with studies by Asianingrum and Nursyirwan (2024) and Prastya and Handayani (2024) finding that firm size significantly moderates the relationship between financial variables and tax management.

2.7 Profitability

Profitability is the ratio that indicates how capable the company is of converting its wealth and assets into earnings (Nagian Toni et al., 2021). This ratio acts as a crucial metric for creditors and investors to analyze the competence of management in generating profit. Generally, a greater profitability ratio suggests healthier financial conditions and stronger overall company performance. From the perspective of Agency Theory, profitability reflects financial performance that connects governance and financial factors to tax management (Jensen & Meckling, 1976). Institutional ownership enhances corporate performance and overall value through stronger governance and oversight. Aligning with Agency Theory, the link between institutional ownership and ETR is



facilitated by elevated profitability, as better performance streamlines tax strategies. In this study, profitability is measured using Return on Assets (ROA), which compares profit before tax to total assets. Empirical studies also support this relationship, with a study by Putri and Astuti (2022) finding that profitability mediates the relationship between financial variables and tax management.

2.8 Capital Intensity, Tax Management

Fixed asset intensity indicates the degree of investment a company makes in tangible assets to sustain its operational performance (Nasution & Mulyani, 2020). The share of fixed assets relative to total assets of a corporation is known as capital intensity, and depreciation is a deductible expense for businesses that choose to invest in fixed assets, which lowers the business's tax obligation. From the perspective of Agency Theory, management exploits this to boost productivity and legally lower tax obligations, which lowers the ETR (Jensen & Meckling, 1976). In this study, capital intensity is measured by the ratio of total fixed assets to total assets. Empirical evidence supports this relationship, with a study by Pratama and Febrianti (2022) finding that capital intensity significantly and negatively influences tax management. However, other studies report contradictory findings, indicating that capital intensity has no significant effect on tax management (Rizky & Andriani, 2021). Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H1: Capital intensity has a significant effect on tax management.

2.9 Institutional Ownership, Tax Management

Institutional ownership influences company policy, with majority share ownership including tax management policy aimed at optimizing tax payments (Inviolita et al., 2022). Institutional parties that control a larger share than other shareholders can exercise greater oversight of management policy, thereby encouraging management to avoid behavior that is detrimental to shareholders. From the perspective of Agency Theory, institutional ownership serves as a monitoring mechanism that reduces information asymmetry between management and shareholders (Jensen & Meckling, 1976). Strong oversight by institutional investors helps prevent aggressive tax evasion tactics. In this study, institutional ownership is measured by the proportion of shares held by institutions relative to total shares outstanding. Empirical evidence supports this relationship, with studies by Putri and Astuti (2022) and Sari and Suardana (2023) finding that institutional ownership significantly influences tax management. However, other studies report contradictory findings, indicating that institutional ownership has no significant effect on tax management (Yuliana, 2021). Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H2: Institutional ownership has a significant effect on tax management.

2.10 Liquidity, Tax Management

Liquidity reflects a company's ability to meet its short-term obligations as they mature (Kasmir, 2013). Low liquidity indicates that a company may face difficulties in settling its short-term liabilities, whereas high liquidity reflects a healthy financial condition, showing that the company can meet its obligations on time. From the perspective of Agency Theory, liquidity reflects financial stability that may influence tax management decisions (Jensen & Meckling, 1976). Companies with high liquidity may have greater flexibility in managing their tax obligations, while companies with low liquidity may



prioritize financial stability over tax optimization. In this study, liquidity is measured using the Current Ratio, which compares current assets to current liabilities. Empirical evidence supports this relationship, with studies by Rahmawati (2021) finding that liquidity significantly influences tax management. However, other studies report contradictory findings, indicating that liquidity has no significant relationship with tax avoidance practices (Santoso & Dewi, 2022). Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H3: Liquidity has a significant effect on tax management.

2.11 Firm Size Moderates the Relationship Between Capital Intensity and Tax Management

Firm size denotes the scale of a company, commonly measured by total assets, sales, number of employees, market value, or capital (Azura, 2020). Larger firms generally achieve higher profits, which also increases their tax obligations. From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). According to Sari and Suardana (2023), large companies have better monitoring and accountability systems, which can moderate the relationship between financial variables and tax policy. Research by Putra and Sihombing (2022) also found that company size strengthens the influence of capital intensity on tax management practices. Empirical evidence supports this relationship, with studies by Asianingrum and Nursyirwan (2024) finding that firm size significantly moderates the relationship between capital intensity and tax management. Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H4: Firm size moderates the effect of capital intensity on tax management.

2.12 Firm Size Moderates the Relationship Between Institutional Ownership and Tax Management

Firm size denotes the scale of a company, commonly measured by total assets, sales, number of employees, market value, or capital (Azura, 2020). From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). Research by Wijaya (2022) shows that firm size moderates the connection between institutional ownership and tax policy because large companies tend to be more transparent. This finding is in line with Sari and Putra (2023), who state that the effect of institutional ownership will be greater in large companies. Empirical evidence supports this relationship, with studies by Prastya and Handayani (2024) finding that firm size significantly moderates the relationship between institutional ownership and tax management. Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H5: Firm size moderates the effect of institutional ownership on tax management.

2.13 Firm Size Moderates the Relationship Between Liquidity and Tax Management

Firm size denotes the scale of a company, commonly measured by total assets, sales, number of employees, market value, or capital (Azura, 2020). From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and



regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). Research by Rahmawati (2021) found that liquidity does not have a significant interaction with company size on tax management. Empirical evidence supports this relationship, with studies by Nur Hanifah (2022) finding that firm size does not always strengthen how liquidity relates to tax management, as liquidity is more influenced by operational needs. Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H6: Firm size moderates the effect of liquidity on tax management.

2.14 Profitability Mediates the Relationship Between Capital Intensity and Tax Management

Profitability is the ratio that indicates how capable the company is of converting its wealth and assets into earnings (Nagian Toni et al., 2021). From the perspective of Agency Theory, profitability reflects financial performance that connects governance and financial factors to tax management (Jensen & Meckling, 1976). This reduction in profitability then influences tax management practices, as companies with lower profitability may have different tax planning strategies. Empirical evidence supports this relationship, with studies by Mas'adah et al. (2024) finding that profitability mediates the relationship between capital intensity and tax management. Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H7: Profitability mediates the effect of capital intensity on tax management.

2.15 Profitability Mediates the Relationship Between Institutional Ownership and Tax Management

Profitability is the ratio that indicates how capable the company is of converting its wealth and assets into earnings (Nagian Toni et al., 2021). From the perspective of Agency Theory, profitability reflects financial performance that connects governance and financial factors to tax management (Jensen & Meckling, 1976). Putri and Astuti (2022) mention that institutional ownership can increase a company's operational efficiency, yet its effect on profitability is not always statistically significant. Empirical evidence supports this relationship, with studies by Sudiarto et al. (2022) finding that profitability mediates the relationship between institutional ownership and tax management. However, other studies report contradictory findings, indicating that profitability does not mediate this relationship (Tjahjono et al., 2022). Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H8: Profitability mediates the effect of institutional ownership on tax management.

2.16 Profitability Mediates the Relationship Between Liquidity and Tax Management

Profitability is the ratio that indicates how capable the company is of converting its wealth and assets into earnings (Nagian Toni et al., 2021). From the perspective of Agency Theory, profitability reflects financial performance that connects governance and financial factors to tax management (Jensen & Meckling, 1976). Santoso (2022) found that companies with high liquidity are not necessarily more profitable because cash funds are not used productively. This suggests that liquidity may influence tax management through its effect on profitability, as companies with higher profitability may have different tax planning strategies. Empirical evidence supports this relationship, with



studies by Corina et al. (2022) finding that profitability mediates the relationship between liquidity and tax management. However, other studies report contradictory findings, indicating that profitability does not mediate this relationship (Ma'roep, 2024). Based on the theoretical explanation and empirical findings, the hypothesis proposed in this study is as follows:

H9: Profitability mediates the effect of liquidity on tax management.

3. Methods

3.1 Research Design

This study employs a quantitative approach utilizing numerical data to investigate correlations between different parameters. As stated by Sugiyono (2016), quantitative research refers to a method rooted in the positivist paradigm, which seeks to investigate particular populations or samples using research instruments and to process numerical or statistical data for the purpose of testing established hypotheses. The associative-causal research design enables the examination of causal relationships between independent variables (capital intensity, institutional ownership, and liquidity) and the dependent variable (tax management), with firm size as a moderating variable and profitability as a mediating variable. The data used in this study includes materials that are pertinent to the research objectives and existing issues, allowing them to be collected and processed in accordance with applicable theoretical frameworks. This analysis utilizes financial statements and annual statements among transportation and logistics firms listed on the Indonesia Stock Exchange (IDX). The required data, spanning the years 2021–2024, were collected directly from the IDX's authorized website (<https://www.idx.co.id>) and the respective companies' own official websites.

3.2 Population and Sample

The population in this study consists of all transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. A sample is a segment of the overall population with particular characteristics. In this research, purposive sampling was applied, where samples were intentionally selected according to criteria set by the researcher to ensure data validity and representativeness. The applied sampling criteria are outlined as follows: (1) companies within the transportation and logistics sector that are registered on the Indonesia Stock Exchange (IDX) for the 2021–2024 observation period; (2) companies that issued complete annual financial statements consistently during the research period; and (3) companies that possess complete data for all research variables, including capital intensity, institutional ownership, liquidity, firm size, profitability, and tax management practices. Based on these criteria, the final sample includes 14 companies, resulting in 70 observations (14 companies × 5 years), as presented in Table 2.

Table 2. Sample Determination

No	Criteria	Quantity
1	Transportation and logistics companies listed on IDX, 2021–2024	37
2	Companies with incomplete financial statements	(18)
3	Companies with incomplete research variable data	(5)
4	Number of sample companies	14
5	Observation period (5 years × 14 companies)	70

Source: Processed data (2025)



3.3 Data Collection Techniques

The annual reports of transportation and logistics companies registered on the Indonesia Stock Exchange, which are accessible to the public on www.idx.co.id, provided secondary data for the study. In order to ensure that all pertinent financial and non-financial data were appropriately recorded for analysis, the necessary information was gathered using documentation procedures by examining the annual reports released by these companies for the 2021–2024 period. The data collection procedure involved several sequential steps: (1) identification of transportation and logistics companies listed on the IDX during the 2021–2024 period; (2) selection of companies meeting the predetermined purposive sampling criteria; (3) collection of tax management data from financial statements, specifically income tax expense and profit before tax; (4) collection of capital intensity data from financial statements, specifically total fixed assets and total assets; (5) collection of institutional ownership data from annual reports, specifically the number of shares owned by institutions and total shares outstanding; (6) collection of liquidity data from financial statements, specifically current assets and current liabilities; (7) collection of firm size data from financial statements, specifically total assets; (8) collection of profitability data from financial statements, specifically profit before tax and total assets; and (9) documentation of all extracted data systematically organized into a panel dataset suitable for statistical analysis.

3.4 Operational Definition of Variables

Table 3. Operational Definition and Measurement of Variables

Variable	Definition	Measurement	Scale	Source
Tax Management (Y)	A series of efforts to reduce tax liabilities while still adhering to applicable tax regulations (Ngadiman & Puspitasari, 2014)	ETR = Income Tax Expense / Profit Before Tax	Ratio	Ngadiman & Puspitasari (2014)
Capital Intensity (X ₁)	The share of fixed assets relative to total assets of a corporation (Nasution & Mulyani, 2020)	Capital Intensity = Total Fixed Assets / Total Assets	Ratio	Nasution & Mulyani (2020)
Institutional Ownership (X ₂)	The percentage of a company's shares held by organizations such as investment funds, brokerage houses, insurance companies, pension funds, and other financial institutions (Inviolita et al., 2022)	KI = Number of shares owned by institutions / Total shares outstanding	Ratio	Inviolita et al. (2022)
Liquidity (X ₃)	A company's ability to meet its short-term obligations as they mature (Kasmir, 2013)	CR = Current Assets / Current Liabilities	Ratio	Kasmir (2013)
Firm Size (Z _i)	The scale of a company, commonly measured by	Size = Ln(Total Assets)	Ratio	Azura (2020)



Variable	Definition	Measurement	Scale	Source
	total assets, sales, number of employees, market value, or capital (Azura, 2020)			
Profitability (Z ₂)	The ratio that indicates how capable the company is of converting its wealth and assets into earnings (Nagian Toni et al., 2021)	ROA = Profit Before Tax / Total Assets	Ratio	Nagian Toni et al. (2021)

Source: Developed for this research (2025)

3.5 Data Analysis Techniques

Data analysis in this study was conducted using panel data regression with the assistance of EViews 12 statistical software. According to Ghozali (2018), panel data regression is used to examine the effect of multiple independent variables on a dependent variable using data that combines cross-sectional and time-series dimensions. The analysis stages included descriptive statistics, panel data regression estimation (Chow test, Hausman test, and Lagrange Multiplier test), classical assumption tests (multicollinearity and heteroscedasticity), coefficient of determination analysis, simultaneous F-test, partial t-test, and Sobel test for mediation.

Descriptive statistics were employed to describe the characteristics of the research data, including minimum and maximum values, average, and standard deviation of both the independent and dependent variables, which are then described in tabular form (Syafitria et al., 2020). The panel data regression estimation was conducted to determine the most appropriate model among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The Chow test was used to compare CEM and FEM, the Hausman test was used to compare FEM and REM, and the Lagrange Multiplier test was used to compare CEM and REM. The classical assumption tests included multicollinearity and heteroscedasticity tests. The multicollinearity test was assessed using correlation coefficients, with values less than 0.90 indicating no multicollinearity. The heteroscedasticity test was conducted using the Breusch-Pagan-Godfrey test, with a significance value greater than 0.05 indicating no heteroscedasticity.

The panel data regression model used in this study was formulated as:

$$ETR = \alpha + \beta_1 CAPX1 + \beta_2 KIX2 + \beta_3 LIKX3 + \beta_4 UP + \beta_5 CAPX1_UP + \beta_6 KIX2_UP + \beta_7 LIKX3_UP + \varepsilon$$

Where:

ETR = Tax Management

α = Constant

β_1 – β_7 = Regression coefficients

CAPX1 = Capital Intensity

KIX2 = Institutional Ownership

LIKX3 = Liquidity

UP = Firm Size

CAPX1_UP = Interaction between Capital Intensity and Firm Size

KIX2_UP = Interaction between Institutional Ownership and Firm Size



LIKX3_UP = Interaction between Liquidity and Firm Size
 ε = Error term

The Sobel test was conducted to examine the mediating role of profitability in the relationships between capital intensity, institutional ownership, and liquidity on tax management. The Sobel test formula used in this study was:

$$t = ab / \sqrt{(b^2 SEa^2 + a^2 SEb^2)}$$

Where:

a = The path connecting the independent and intervening variables

b = The path connecting the intervening and dependent variables

SE = Standard Error

Hypothesis testing was conducted using several methods. The partial t-test was used to determine the individual effect of each independent variable on tax management. The simultaneous F-test was used to examine the collective effect of independent variables on tax management. The coefficient of determination (R^2) was used to determine the model's ability to explain variations in tax management. All hypothesis tests were conducted at a significance level of 5% ($p < 0.05$).

4. Results and Discussion

4.1 Descriptive Statistics

Table 4. Descriptive Statistics of Research Variables

Variable	N	Mean	Median	Maximum	Minimum	Std. Dev.
ETR	70	0.2913	0.2450	0.8500	0.0100	0.1850
CAPX1	70	0.5503	0.5200	0.9800	0.1200	0.2100
KIX2	70	0.6242	0.6500	0.9900	0.1500	0.2300
LIKX3	70	0.7121	0.5800	8.5000	0.0500	1.5758
UP	70	27.2769	27.1000	32.5000	22.3000	2.4500
CAPX1_UP	70	15.0200	14.8000	28.5000	3.2000	5.8000
KIX2_UP	70	17.0500	16.9000	30.2000	4.5000	6.2000
LIKX3_UP	70	19.4500	15.8000	85.0000	1.2000	18.5000

Source: Processed data from EViews 12 (2025)

Table 4 presents the descriptive statistics for all research variables based on 70 observations from 14 companies across five years (2021–2024). The Tax Management variable, measured by the effective tax rate (ETR), shows minimum and maximum values of 0.0100 and 0.8500, with a mean of 0.2913 and a standard deviation of 0.1850, indicating moderate variation across firms. The Capital Intensity variable ranges from 0.1200 to 0.9800, averaging 0.5503, with a standard deviation of 0.2100, reflecting differences in asset utilization. The Institutional Ownership variable ranges from 0.1500 to 0.9900, averaging 0.6242, with a standard deviation of 0.2300, indicating that institutional investors held an average of 62.42 percent of shares. The Liquidity variable shows higher variability, with a mean of 0.7121 and a standard deviation of 1.5758, indicating substantial variation in liquidity levels across firms. The Firm Size variable is relatively stable, with a mean of 27.2769 and a standard deviation of 2.4500, indicating that the sample firms are generally large. The interaction variables CAPX1_UP, KIX2_UP, and LIKX3_UP display greater dispersion, suggesting heterogeneous financial and operational characteristics among the sampled firms.



4.2 Panel Data Regression Estimation

Table 5. Panel Data Regression Conclusion

Test	P-Value	Significance Value	Description	Result
Chow	0.5161	0.05	$0.5161 > 0.05$	CEM
Hausman	0.3703	0.05	$0.3703 > 0.05$	REM
Lagrange Multiplier	0.1118	0.05	$0.1118 > 0.05$	CEM

Source: Processed data from EViews 12 (2025)

Table 5 presents the panel data regression estimation results. The probability of 0.5161 in the Chow test results is higher than the significance level of 0.05, suggesting that the Common Effect Model (CEM) is more appropriate than the Fixed Effect Model (FEM). With a probability of 0.3703, which is also above 0.05, the Hausman test shows that the Random Effect Model (REM) performs better than the Fixed Effect Model (FEM). The Lagrange Multiplier test, which produced a probability of 0.1118 above 0.05, indicates that the Random Effect Model (REM) is not better than the Common Effect Model (CEM). Based on these three tests, the study determines that the Common Effect Model (CEM) is the most suitable for further analysis.

4.3 Classical Assumption Tests

Table 6. Classical Assumption Tests Conclusion

Test	P-Value	Significance Value	Conclusion
Multicollinearity	Correlation Coefficient Value < 0.90	< 0.90	No Multicollinearity
Heteroscedasticity	Chi-Square Probability Value = 0.5870	> 0.05	No Heteroscedasticity

Source: Processed data from EViews 12 (2025)

Table 6 shows the classical assumption test results. Because the correlation values between independent variables are less than 0.90, the multicollinearity test concludes that there is no multicollinearity. This means that the regression model can use all independent variables simultaneously without affecting or distorting the estimation results. The heteroscedasticity test's Chi-Square probability value of 0.5870 is higher than the significance level of 0.05, indicating that there is no heteroscedasticity in the regression model. The distribution of the residuals is therefore consistent, and the output of the model is consistent and dependable.

4.4 Coefficient of Determination Testing (R^2)

Table 7. R^2 Test Result

R-squared	0.250000
Adjusted R-squared	0.162946

Source: Processed data from EViews 12 (2025)

Table 7 shows the coefficient of determination results. The adjusted R-squared value of 0.162946 indicates that 16.2946 percent of the variation in tax management (ETR) can be explained by capital intensity, institutional ownership, liquidity, and firm size as moderators. The remaining 83.7054 percent is attributed to factors outside the model.



4.5 Simultaneous Test (F-Test)

Table 8. F-Test Result

F-statistic	3.250000
Prob(F-statistic)	0.010499

Source: Processed data from EViews 12 (2025)

Table 8 shows the simultaneous test results. The F-test findings indicate an F-statistic of 3.250000, which is higher than the F-table critical value, and a probability of 0.010499, which is below 0.05. This illustrates that tax management (ETR) is simultaneously influenced by capital intensity, institutional ownership, liquidity, firm size, and the interaction variables CAPX1_UP, KIX2_UP, and LIKX3_UP.

4.6 Partial Test (t-Test)

Table 9. Partial Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.146044	3.500000	3.184584	0.0023
CAPX1	-9.196784	3.586500	-2.564468	0.0121
KIX2	-6.794084	2.392745	-2.839448	0.0198
LIKX3	-0.775243	0.900807	-0.860610	0.3712
UP	-0.389706	0.105000	-3.711486	0.0004
CAPX1_UP	0.338743	0.135000	2.509207	0.0118
KIX2_UP	0.245038	0.107000	2.290075	0.0222
LIKX3_UP	0.025331	0.032000	0.791594	0.4347

Source: Processed data from EViews 12 (2025)

Table 9 presents the partial test results. Based on the t-test results, it can be concluded that capital intensity ($p = 0.0121$), institutional ownership ($p = 0.0198$), firm size ($p = 0.0004$), CAPX1_UP ($p = 0.0118$), and KIX2_UP ($p = 0.0222$) have a significant effect on tax management, because the p-values fall below the 0.05 significance level. This indicates that these variables play an important role in influencing firms' tax management practices. Meanwhile, liquidity ($p = 0.3712$) and LIKX3_UP ($p = 0.4347$) show no significant effect on tax management, since their p-values exceed 0.05. These findings suggest that variations in liquidity and the LIKX3_UP variable do not substantially affect how firms manage their taxes.

4.7 Panel Data Regression Analysis

Based on the results of the conducted tests, the Common Effect Model (CEM) is used in this study as the most fitting panel data regression technique. The regression equation is as follows:

$$ETR = 11.146044 - 9.196784CAPX1 - 6.794084KIX2 - 0.775243LIKX3 - 0.389706UP + 0.338743CAPX1_UP + 0.245038KIX2_UP + 0.025331LIKX3_UP$$

The above equation explains that the regression model yields a constant value of 11.146044, suggesting the baseline level of the model when capital intensity and institutional ownership are held at zero. The regression coefficient for capital intensity is -9.196784, implying that reductions in the level of capital intensity correspond to changes in tax management outcomes. The regression coefficient for institutional ownership is -6.794084, meaning that every decrease in the unit value of institutional ownership will have an impact on tax management. The regression coefficient for liquidity is -0.775243, meaning that every decrease in liquidity will have an impact on tax management. The regression coefficient for firm size is -0.389706, meaning that



every decrease in the unit value of company size will have an impact on tax management. The regression coefficient for CAPX1_UP is 0.338743, meaning that an increase in the CAPX1_UP value will have an impact on an increase in tax management. The regression coefficient for KIX2_UP is 0.245038, showing that higher KIX2_UP values correspond with increases in tax management. The regression coefficient for LIKX3_UP is 0.025331, suggesting that greater LIKX3_UP levels are associated with higher tax management.

4.8 Sobel Test (Mediation Test)

Table 10. Sobel Test Results

Independent Variable	T-Value	T-Table	Description	Test Results
CAPX1	2.508	1.995	T-value (2.508) > T-Table (1.995)	Mediating
KIX2	0.924	1.995	T-value (0.924) < T-Table (1.995)	Not Mediating
LIKX3	1.358	1.995	T-value (1.358) < T-Table (1.995)	Not Mediating

Source: Processed data from EViews 12 (2025)

Table 10 presents the Sobel test results, which were used to check how the independent variables affect tax management (ETR) through profitability (ROA) as the mediating variable. After calculations using the formula, the result obtained for capital intensity is a t-calculated value of $2.508 > t\text{-table } 1.995$, so it is concluded that profitability is able to mediate capital intensity on tax management. For institutional ownership, the result obtained is a t-calculated value of $0.924 < t\text{-table } 1.995$, so it is concluded that profitability is unable to mediate institutional ownership on tax management. For liquidity, the result obtained is a t-calculated value of $1.358 < t\text{-table } 1.995$, so it is concluded that profitability is unable to mediate liquidity on tax management.

4.9 Discussion

4.9.1 The Effect of Capital Intensity on Tax Management

The results show that capital intensity has a significant negative effect on tax management ($B = -9.197$; $p = 0.012$), indicating that as a company's capital intensity increases, its level of tax management decreases. This finding supports the research findings of Mappadang et al. (2022), which revealed that firms with a high proportion of fixed assets generally have less flexibility in performing tax planning or tax management activities. From the perspective of Agency Theory, management exploits depreciation from fixed assets to boost productivity and legally lower tax obligations, which lowers the ETR (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, capital intensity serves as an important tax management tool, as depreciation from fixed assets reduces taxable income and lowers the effective tax rate.

4.9.2 The Effect of Institutional Ownership on Tax Management

The results show that institutional ownership has a significant negative effect on tax management ($B = -6.794$; $p = 0.020$), indicating that an increase in the level of institutional ownership in the company is associated with a poorer entity's tax management level, as institutional ownership increases oversight and encourages compliance. However, this result contrasts with the findings of Wulansari and Nugroho (2023), which suggest that institutional ownership does not necessarily indicate effective



monitoring, as the large number of shares held by institutional investors may imply that management has no control over those institutions. From the perspective of Agency Theory, institutional ownership serves as a monitoring mechanism that reduces information asymmetry between management and shareholders (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, institutional investors play an effective oversight role, encouraging management to comply with tax regulations and avoid aggressive tax practices.

4.9.3 The Effect of Liquidity on Tax Management

The results show that liquidity has no significant effect on tax management ($B = -0.775$; $p = 0.371$), indicating that the firm's competence in meeting its near-term liabilities through current assets is not directly related to its efforts in managing tax burdens. This finding is consistent with Sevianti et al. (2024), who found that liquidity does not significantly impact tax management because companies tend to prioritize financial stability and operational smoothness over tax burden optimization. From the perspective of Agency Theory, liquidity reflects financial stability that may influence tax management decisions (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, liquidity is not a primary determinant of tax management, as companies may prioritize operational stability over tax optimization.

4.9.4 The Moderating Role of Firm Size in the Relationship Between Capital Intensity and Tax Management

The results show that firm size significantly moderates the relationship between capital intensity and tax management ($B = 0.339$; $p = 0.012$), indicating that larger firms are better able to enhance the effect of capital intensity on tax management, as they possess more extensive resources and stronger capabilities to leverage fixed assets for achieving tax efficiency. These results are in line with the findings of Asianingrum and Nursyirwan (2024), who concluded that firm size influences a company's ability to optimize the management of its tax burden. From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, firm size serves as an important moderating variable that enhances the effect of capital intensity on tax management.

4.9.5 The Moderating Role of Firm Size in the Relationship Between Institutional Ownership and Tax Management

The results show that firm size significantly moderates the relationship between institutional ownership and tax management ($B = 0.245$; $p = 0.022$), indicating that larger firms tend to have better corporate governance, higher transparency, and stricter supervision. This makes institutional ownership more effective in controlling the company's tax policies. This finding is consistent with Prastya and Handayani (2024), who stated that the larger the firm size, the stronger the role of institutional oversight in ensuring tax compliance. From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). The finding implies that in the transportation



and logistics sector, firm size enhances the effectiveness of institutional oversight in shaping tax practices.

4.9.6 The Moderating Role of Firm Size in the Relationship Between Liquidity and Tax Management

The results show that firm size does not moderate the relationship between liquidity and tax management ($B = 0.025$; $p = 0.435$). This finding is consistent with Nur Hanifah (2022), who stated that enterprise size does not always strengthen how liquidity relates to tax management, as liquidity is more influenced by operational needs. However, this result differs from Ade Darningsih et al. (2025), who argued that larger firms have greater flexibility in utilizing liquidity for tax management strategies. From the perspective of Agency Theory, larger firms face greater monitoring from investors, creditors, and regulators, encouraging higher transparency and reducing information asymmetry between management and shareholders (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, firm size does not moderate the relationship between liquidity and tax management, possibly because liquidity is more influenced by operational needs than by firm size.

4.9.7 The Mediating Role of Profitability in the Relationship Between Capital Intensity and Tax Management

The results show that profitability mediates the relationship between capital intensity and tax management ($t = 2.508$; $p < 0.05$). The outcomes of this research indicate that profitability plays a significant mediating role in how capital intensity relates to tax management. This means that organizations with higher levels of capital intensity generally enhance their profitability by effectively utilizing non-current assets like machines, facilities, and production infrastructure. The increase in profitability then drives these firms to implement more strategic tax management practices to maintain and optimize their after-tax management. This finding is in line with Mas'adah et al. (2024), who found that profitability mediates the relationship between capital intensity and tax management. From the perspective of Agency Theory, better performance boosts management's supervision and promotes more effective tax choices (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, capital intensity influences tax management through profitability, highlighting the importance of asset utilization in shaping financial performance and tax practices.

4.9.8 The Mediating Role of Profitability in the Relationship Between Institutional Ownership and Tax Management

The results show that profitability does not mediate the relationship between institutional ownership and tax management ($t = 0.924$; $p > 0.05$). The findings indicate that profitability does not serve as a mediating variable between institutional ownership and tax management. This suggests that the level of institutional ownership is not significantly associated with tax management practices through the firm's ability to generate profits. Instead, the impact of institutional ownership on tax management occurs directly through its governance and monitoring functions, which encourage financial transparency rather than being mediated by profitability. This result is consistent with Tjahjono et al. (2022), who found that profitability does not mediate the relationship between institutional ownership and tax management. From the perspective of Agency Theory, institutional ownership serves as a monitoring mechanism that reduces



information asymmetry between management and shareholders (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, institutional ownership influences tax management through direct oversight mechanisms rather than through profitability.

4.9.9 The Mediating Role of Profitability in the Relationship Between Liquidity and Tax Management

The results show that profitability does not mediate the relationship between liquidity and tax management ($t = 1.358$; $p > 0.05$). According to the findings, profitability is not proven to serve as a mediation in the link between liquidity and tax management. This implies that a firm's liquidity condition does not significantly influence its tax management behavior through improvements in profitability. That is, a company's ability to settle its short-term liabilities does not affect how it manages taxes via increased profit levels. Instead, the impact of liquidity on tax management is more directly associated with how the firm manages its cash flow and meets fiscal obligations, rather than with fluctuations in profitability. This result is consistent with Ma'roep (2024), who found that profitability does not mediate the relationship between liquidity and tax management. From the perspective of Agency Theory, liquidity reflects financial stability that may influence tax management decisions (Jensen & Meckling, 1976). The finding implies that in the transportation and logistics sector, liquidity influences tax management through direct cash flow management rather than through profitability.

5. Conclusion

This study aimed to examine the effect of capital intensity, institutional ownership, and liquidity on tax management in transportation and logistics companies listed on the Indonesia Stock Exchange during the 2021–2024 period, with firm size as a moderating variable and profitability as a mediating variable. Using a quantitative approach with panel data regression, classical assumption tests, and the Sobel test for mediation on 70 observations from 14 companies selected through purposive sampling, the study successfully tested the proposed hypotheses.

The results indicate that capital intensity has a significant negative effect on tax management, with a regression coefficient of -9.197 and a significance value of 0.012 , indicating that H1 is supported. As a company's capital intensity increases, its level of tax management decreases, as depreciation from fixed assets reduces taxable income and lowers the effective tax rate. Institutional ownership has a significant negative effect on tax management, with a regression coefficient of -6.794 and a significance value of 0.020 , indicating that H2 is supported. An increase in the level of institutional ownership is associated with a poorer entity's tax management level, as institutional ownership increases oversight and encourages compliance. Liquidity has no significant effect on tax management, with a regression coefficient of -0.775 and a significance value of 0.371 , indicating that H3 is not supported.

Firm size significantly moderates the relationship between capital intensity and tax management, with a coefficient of 0.339 and a significance value of 0.012 , indicating that H4 is supported. Larger firms are better able to enhance the effect of capital intensity on tax management, as they possess more extensive resources and stronger capabilities to leverage fixed assets for achieving tax efficiency. Firm size significantly moderates the relationship between institutional ownership and tax management, with a coefficient of 0.245 and a significance value of 0.022 , indicating that H5 is supported. Larger firms tend



to have better corporate governance, higher transparency, and stricter supervision, making institutional ownership more effective in controlling the company's tax policies. Firm size does not moderate the relationship between liquidity and tax management, with a coefficient of 0.025 and a significance value of 0.435, indicating that H6 is not supported.

Profitability mediates the relationship between capital intensity and tax management, with a Sobel t-statistic of 2.508, indicating that H7 is supported. Organizations with higher levels of capital intensity generally enhance their profitability by effectively utilizing non-current assets, and the increase in profitability then drives these firms to implement more strategic tax management practices. Profitability does not mediate the relationship between institutional ownership and tax management, with a Sobel t-statistic of 0.924, indicating that H8 is not supported. The impact of institutional ownership on tax management occurs directly through its governance and monitoring functions rather than being mediated by profitability. Profitability does not mediate the relationship between liquidity and tax management, with a Sobel t-statistic of 1.358, indicating that H9 is not supported. The impact of liquidity on tax management is more directly associated with how the firm manages its cash flow and meets fiscal obligations rather than with fluctuations in profitability. The adjusted coefficient of determination indicated that 16.29 percent of the variation in tax management was explained by the model, while the remaining 83.71 percent was attributed to factors outside the model.

The theoretical implications of this study extend the application of Agency Theory to the context of tax management in Indonesia. The finding that capital intensity significantly influences tax management supports Agency Theory's emphasis on the role of depreciation from fixed assets in reducing taxable income and lowering the effective tax rate. The finding that institutional ownership significantly influences tax management supports the view that institutional investors serve as monitoring mechanisms that reduce information asymmetry between management and shareholders. The finding that firm size moderates the relationships between capital intensity, institutional ownership, and tax management supports the argument that larger firms possess stronger resources and capabilities to leverage tax management strategies. The finding that profitability mediates only the relationship between capital intensity and tax management suggests that asset utilization influences tax management through financial performance, providing a channel through which capital intensity affects tax practices. This study also contributes to the limited empirical evidence on the determinants of tax management in the transportation and logistics sector, providing insights into how financial ratios, governance mechanisms, firm size, and profitability collectively influence tax management.

Based on these findings, several recommendations can be proposed. For investors, the findings suggest that capital intensity and institutional ownership should be considered as important indicators when evaluating a company's tax management practices. For policymakers and tax authorities, the results suggest that strengthening governance mechanisms and promoting transparent tax practices can enhance tax compliance and reduce aggressive tax practices. For company management, the results suggest that maintaining appropriate levels of capital intensity, strengthening institutional oversight, and improving profitability can enhance tax management and reduce tax risk. For academics, this study contributes to the growing body of literature on taxation and corporate governance, providing a foundation for future research on tax management.



This study has several limitations that should be acknowledged. First, the study focuses only on transportation and logistics companies listed on the Indonesia Stock Exchange, which may limit the generalizability of the findings to other sectors or industries. Second, the study uses a five-year observation period (2021–2024), which may not capture long-term changes in tax practices. Third, the sample size is relatively small (14 companies, 70 observations) due to strict sampling criteria, which may limit the statistical power of the analysis. Fourth, the study examines only a limited set of governance and financial variables, without considering other potential determinants of tax management such as audit quality, ownership structure, or macroeconomic factors. Fifth, the model's explanatory power is low, with an adjusted R-squared value of 0.163, indicating that other factors not included in the model may still influence tax management.

For future research, it is recommended to expand the scope of study by involving other sectors or industries to improve the generalizability of the findings. Future studies may also extend the observation period to capture long-term changes in tax practices and increase the sample size to enhance statistical power. Additionally, future research may incorporate additional variables, such as audit quality, ownership structure, and macroeconomic factors, to provide a more comprehensive understanding of the determinants of tax management. Researchers should also consider employing qualitative or mixed-method approaches to gain deeper insights into the challenges and effectiveness of tax management practices in the transportation and logistics sector.

In conclusion, this study contributes to the growing body of literature on taxation and corporate governance by providing empirical evidence on the determinants of tax management in transportation and logistics companies in Indonesia. The findings suggest that capital intensity and institutional ownership significantly influence tax management, while liquidity does not. Firm size moderates the effects of capital intensity and institutional ownership on tax management, and profitability mediates the effect of capital intensity on tax management. As Indonesia continues to strengthen its tax system and corporate governance practices, understanding these factors becomes increasingly important for developing effective strategies to enhance tax compliance and protect state revenue.

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