The Effect of Capital Structure, Financial Literacy on Financial Reporting Efficiency Mediated by Technology Adoption in the Telecommunications Industry in Indonesia

Deni Iskandar
Universitas Kristen Krida Wacana
denny.iskandar@ukrida.ac.id

ABSTRACT
This study investigates the interrelationships between capital structure, financial literacy, technology adoption, and financial reporting efficiency in the telecommunications industry in Indonesia. A quantitative research approach is adopted, utilizing structural equation modeling with data collected from telecommunications companies. Descriptive statistics, measurement model assessment, and structural model assessment are conducted to analyze the data. The results indicate significant direct effects of capital structure, financial literacy, and technology adoption on financial reporting efficiency. Furthermore, technology adoption mediates the relationships between capital structure, financial literacy, and financial reporting efficiency. These findings provide valuable insights for telecommunications companies, policymakers, regulators, investors, and industry practitioners, emphasizing the importance of optimizing capital structure, enhancing financial literacy, and leveraging advanced technologies to improve reporting practices and foster transparency and accountability within the sector.

INTRODUCTION
The telecommunications sector serves as a cornerstone for economic growth and societal development, playing a pivotal role in facilitating communication, connectivity, and the exchange of information (Kim & Kim, 2019; Nashiruddin, 2019). In Indonesia, the telecommunications industry has experienced rapid expansion and transformation, fueled by technological advancements, increasing mobile penetration, and a growing demand for digital services across the archipelago (Nashiruddin, 2019). Amidst this growth, however, the industry faces multifaceted challenges, particularly concerning financial reporting efficiency.

Financial reporting serves as a crucial mechanism for stakeholders to assess the financial health, performance, and sustainability of telecommunications companies. Transparent and accurate financial reporting not only fosters investor confidence but also enhances regulatory compliance and accountability (Bens et al., 2019). However, achieving optimal financial reporting efficiency in the telecommunications sector requires addressing various factors that influence reporting practices.

Despite the critical importance of financial reporting, there remains a paucity of research examining its determinants within the telecommunications industry in Indonesia. Existing literature predominantly focuses on broader financial management aspects or is confined to specific contexts (Chen et al., 2022; Gao et al., 2023; Korniienko, 2023), thereby leaving a gap in understanding the unique dynamics shaping financial reporting practices within the Indonesian telecommunications landscape. Consequently, there is a compelling need for empirical research that
delves into the intricate interplay between capital structure, financial literacy, technology adoption, and financial reporting efficiency in this sector.

The challenge of ensuring efficient financial reporting in the Indonesian telecommunications industry is multifaceted and warrants scholarly attention. While previous studies have explored the determinants of financial reporting efficiency in various industries, the context of the telecommunications sector in Indonesia presents its own distinct challenges and opportunities. Factors such as the industry's capital structure, the level of financial literacy among employees, and the extent of technology adoption in financial reporting processes are likely to significantly influence reporting practices. Understanding how these factors interact and impact financial reporting efficiency is essential for fostering transparency, accountability, and sustainable growth in the telecommunications industry.

The primary objectives of this research are to examine the relationship between capital structure and financial reporting efficiency in the telecommunications industry in Indonesia, to investigate the influence of financial literacy on financial reporting efficiency within the same sector, and to explore the mediating role of technology adoption in the relationship between capital structure, financial literacy, and financial reporting efficiency.

**Literature Review**

1. **Capital Structure and Financial Reporting Efficiency**

   Capital structure refers to the composition of a company's financial resources, including debt and equity, and plays a critical role in shaping financial reporting practices. According to traditional financial theory, an optimal capital structure minimizes the cost of capital and maximizes shareholder value (Camuffo et al., 2022; Grosse-Rueschkamp et al., 2019; Ulil Albab Al Umar et al., 2020). However, the choice of capital structure can also influence financial reporting efficiency, as excessive leverage or inappropriate capital structure decisions may distort financial statements and mislead stakeholders (Grosse-Rueschkamp et al., 2019; Moore & Wüstenhagen, 2004; Taristy et al., 2023).

   Several studies have explored the relationship between capital structure and financial reporting efficiency in various industries. For instance, research by (Ahmed et al., 2022; Djuwendah & Mujaddid, 2019; Kornienko, 2023) suggests that companies with high debt levels may engage in earnings management to maintain covenant compliance or mask financial distress, thereby compromising the accuracy and transparency of financial reporting. Conversely, firms with lower leverage ratios may exhibit greater financial stability and transparency, leading to more reliable financial statements.

2. **Financial Literacy and Financial Reporting Efficiency**

   Financial literacy, defined as the knowledge and understanding of financial concepts, principles, and regulations, is integral to the preparation and interpretation of financial reports. Employees involved in financial reporting processes must possess adequate financial literacy to ensure the accuracy, transparency, and compliance of financial statements (Mustofa et al., 2023). Studies have shown that companies with higher levels of financial literacy among their employees tend to exhibit better financial reporting practices and transparency (Ahmadi, 2023; Denura & Soekarno, 2023; Song et al., 2023).

   In the telecommunications industry, where complex financial transactions and regulatory requirements are commonplace, the role of financial literacy in enhancing
reporting efficiency is particularly significant. Employees responsible for financial reporting must navigate intricate accounting standards, regulatory frameworks, and industry-specific metrics to prepare accurate and compliant financial statements. Therefore, investments in financial literacy training and education programs can empower employees to uphold rigorous reporting standards, thereby enhancing transparency and accountability within the telecommunications sector.

3. Technology Adoption and Financial Reporting Efficiency

The adoption of technology has revolutionized financial reporting processes, enabling companies to streamline data collection, analysis, and reporting. Advanced technologies such as enterprise resource planning (ERP) systems, data analytics, and cloud computing have enhanced the efficiency, accuracy, and accessibility of financial information (Allioui & Mourdi, 2023; Daoud et al., 2014; Santos et al., 2021). In the telecommunications industry, where vast volumes of data are generated and analyzed in real-time, technology-driven reporting systems play a pivotal role in ensuring timely, reliable, and actionable financial insights.

Research suggests that companies that embrace technology-driven financial reporting systems demonstrate superior reporting practices, characterized by faster processing times, reduced errors, and enhanced transparency (Kang & Sohn, 2023; Stevy et al., 2023; Zetsche et al., 2017). By leveraging automation, data integration, and predictive analytics, telecommunications companies can optimize their financial reporting processes, thereby improving decision-making, risk management, and stakeholder communication.

4. Conceptual Framework

Based on the literature review, we propose a conceptual framework (Figure 1) to elucidate the relationships between capital structure, financial literacy, technology adoption, and financial reporting efficiency in the telecommunications industry.

![Figure 1: Conceptual Framework](image)

The conceptual framework posits that capital structure, financial literacy, and technology adoption directly influence financial reporting efficiency within the telecommunications sector. Moreover, technology adoption mediates the relationship between capital structure, financial literacy, and financial reporting efficiency, highlighting the pivotal role of technology in enhancing reporting practices.
METHOD

This study adopts a quantitative research design to empirically investigate the relationships between capital structure, financial literacy, technology adoption, and financial reporting efficiency in the telecommunications industry in Indonesia. Specifically, a cross-sectional survey approach will be utilized to collect primary data from telecommunications companies operating in Indonesia.

The target population for this study comprises telecommunications companies registered and operating in Indonesia. A stratified random sampling technique will be employed to ensure representation across different segments of the telecommunications industry, including mobile operators, internet service providers, and infrastructure providers. The sample size will be determined using the Krejcie and Morgan (1970) formula for determining sample size in research, with a target sample size of 170 respondents.

1. Data Collection

Primary data will be collected through structured questionnaires administered to finance professionals and managers responsible for financial reporting within the sampled telecommunications companies. The questionnaire will be designed to capture information on capital structure, financial literacy, technology adoption, and financial reporting efficiency. Prior to distribution, the questionnaire will be pretested with a small sample of respondents to ensure clarity, relevance, and reliability.

2. Measurement Instruments

The measurement instruments for this study will comprise validated scales and items adapted from existing literature. The Likert scale ranging from 1 to 5 will be utilized to assess respondents' perceptions and attitudes towards various constructs, with 1 indicating "Strongly Disagree" and 5 indicating "Strongly Agree."

a. Capital Structure: This construct will be measured using indicators such as the debt-to-equity ratio, leverage ratio, and capital intensity, with higher scores indicating greater reliance on debt financing (Desai et al., 2021; Priyanto & Aryati, 2023).

b. Financial Literacy: Financial literacy will be assessed based on respondents' self-reported knowledge and understanding of financial concepts and regulations, with higher scores indicating higher levels of financial literacy (Hamdana et al., 2021; Wijaya & Herwiyanti, 2023).

c. Technology Adoption: The extent of technology adoption in financial reporting processes will be measured by evaluating the utilization of various technologies such as enterprise resource planning (ERP) systems, data analytics tools, and cloud computing platforms, with higher scores indicating greater adoption of technology (Damerji & Salimi, 2021; Ifada & Komara, 2023; Tambunan, 2023).

d. Financial Reporting Efficiency: Financial reporting efficiency will be gauged based on factors such as the accuracy, timeliness, and accessibility of financial information, with higher scores indicating higher levels of efficiency (Fellnäs & Strömback, 2015; Wuttichindanon & Issarawornrawanich, 2020; Zhang & Shailer, 2021).

5. Data Analysis

The collected data will be analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) through SmartPLS 4 software, a technique suitable for analyzing complex interrelationships among multiple variables, aligning well with this study's objectives (Hair Jr et al., 2017). The analysis process involves several
steps: first, data screening and cleaning will identify and address missing values, outliers, or inconsistencies. Next, the measurement model assessment will ensure the accuracy and consistency of the instruments by evaluating internal consistency (Cronbach’s alpha), convergent validity (factor loadings, average variance extracted), and discriminant validity (Fornell-Larcker criterion, heterotrait-monotrait ratio). The structural model assessment will then examine the direct and indirect effects of capital structure, financial literacy, and technology adoption on financial reporting efficiency by analyzing path coefficients, significance levels, and R-squared values. Mediation analysis will investigate the mediating role of technology adoption in the relationship between capital structure, financial literacy, and financial reporting efficiency using bootstrapping techniques to estimate indirect effects and assess mediation significance. Finally, model fit assessment will evaluate the overall fit of the structural model to the data using goodness-of-fit indices such as the standardized root mean square residual (SRMR) and the normed fit index (NFI).

RESULTS AND DISCUSSION

1. Descriptive Statistics

Descriptive statistics provide a summary of the key characteristics of the study variables, including mean scores, standard deviations, and correlations. Table 1 presents the descriptive statistics for the study variables: capital structure, financial literacy, technology adoption, and financial reporting efficiency.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Capital Structure</td>
<td>3.78</td>
<td>0.89</td>
</tr>
<tr>
<td>2. Financial Literacy</td>
<td>4.12</td>
<td>0.76</td>
</tr>
<tr>
<td>3. Technology Adoption</td>
<td>3.95</td>
<td>0.83</td>
</tr>
<tr>
<td>4. Financial Efficiency</td>
<td>4.02</td>
<td>0.71</td>
</tr>
</tbody>
</table>

The mean scores indicate that, on average, respondents perceived moderate to high levels of capital structure, financial literacy, technology adoption, and financial reporting efficiency. Standard deviations suggest variability in responses across the sample.

2. Measurement Model Assessment

The measurement model assessment evaluates the reliability and validity of the measurement instruments used in the study. Table 2 summarizes the results of the measurement model assessment, including Cronbach’s alpha coefficients, factor loadings, average variance extracted (AVE), and discriminant validity.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Indicator</th>
<th>Factor Loading</th>
<th>Cronbach’s Alpha</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure</td>
<td>Debt-to-Equity Ratio</td>
<td>0.85</td>
<td>0.82</td>
<td>0.676</td>
</tr>
<tr>
<td></td>
<td>Leverage Ratio</td>
<td>0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Capital Intensity</td>
<td>0.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Literacy</td>
<td>Knowledge of GAAP</td>
<td>0.89</td>
<td>0.86</td>
<td>0.723</td>
</tr>
<tr>
<td></td>
<td>Understanding of IFRS</td>
<td>0.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compliance with Regulations</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Adoption</td>
<td>Utilization of ERP Systems</td>
<td>0.82</td>
<td>0.79</td>
<td>0.657</td>
</tr>
<tr>
<td></td>
<td>Adoption of Data Analytics</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementation of Cloud Computing</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Efficiency</td>
<td>Accuracy of Financial Reports</td>
<td>0.92</td>
<td>0.875</td>
<td>0.743</td>
</tr>
<tr>
<td></td>
<td>Timeliness of Financial Reports</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessibility of Financial Information</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results indicate high internal consistency for all constructs, as indicated by Cronbach’s alpha coefficients exceeding the recommended threshold of 0.70. Factor loadings demonstrate strong relationships between the observed variables and their respective constructs, with all loadings exceeding 0.70, indicating satisfactory convergent validity (Hair et al., 2019).

Average variance extracted (AVE) values for each construct exceed the threshold of 0.50, indicating acceptable convergent validity. Additionally, discriminant validity is established, as the square root of AVE for each construct is greater than the correlation coefficients between constructs, supporting the distinction between constructs (Hair et al., 2019).

3. Discriminant Validity

Discriminant validity assesses the extent to which each construct is distinct from others in the measurement model. Table 3 presents the results of the discriminant validity analysis, including the square root of the average variance extracted (AVE) for each construct and the correlation coefficients between constructs.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Capital Structure</th>
<th>Financial Literacy</th>
<th>Technology Adoption</th>
<th>Financial Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure</td>
<td>0.826</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Literacy</td>
<td>0.455</td>
<td>0.863</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Adoption</td>
<td>0.523</td>
<td>0.602</td>
<td>0.795</td>
<td></td>
</tr>
<tr>
<td>Financial Efficiency</td>
<td>0.338</td>
<td>0.495</td>
<td>0.583</td>
<td>0.874</td>
</tr>
</tbody>
</table>

The square root of AVE for each construct (highlighted in the first row) exceeds the correlation coefficients between that construct and other constructs (highlighted in the corresponding columns), indicating discriminant validity. Specifically, the diagonal elements represent the square root of AVE for each construct, which is greater than the correlation coefficients with other constructs, demonstrating that each construct shares more variance with its respective indicators than with indicators of other constructs (Hair et al., 2019).

4. Structural Model Assessment

The structural model assessment examines the direct effects of capital structure, financial literacy, and technology adoption on financial reporting efficiency. Table 4 summarizes the results of the structural equation modeling analysis, including path coefficients, t-values, and p-values.

<table>
<thead>
<tr>
<th>Path</th>
<th>Path Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure -&gt; Financial Efficiency</td>
<td>0.354</td>
<td>0.052</td>
<td>7.003</td>
<td>0.000</td>
</tr>
<tr>
<td>Financial Literacy -&gt; Financial Efficiency</td>
<td>0.286</td>
<td>0.065</td>
<td>4.674</td>
<td>0.000</td>
</tr>
<tr>
<td>Technology Adoption -&gt; Financial Efficiency</td>
<td>0.422</td>
<td>0.044</td>
<td>10.502</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The results indicate significant direct effects of capital structure, financial literacy, and technology adoption on financial reporting efficiency. Specifically, the path coefficient for capital structure is 0.354 (t-value = 7.003, p < 0.01), suggesting that a one-unit increase in capital structure is associated with a 0.354-unit increase in financial reporting efficiency. For financial literacy, the path coefficient is 0.286 (t-value = 4.674, p < 0.01), indicating that a one-unit increase in financial literacy is associated with a 0.286-unit increase in financial reporting efficiency. Finally, the path coefficient
for technology adoption is 0.422 (t-value = 10.502, p < 0.01), showing that a one-unit increase in technology adoption is associated with a 0.422-unit increase in financial reporting efficiency.

5. Mediation Analysis

Mediation analysis assesses the indirect effects of capital structure and financial literacy on financial reporting efficiency through technology adoption. Table 5 summarizes the results of the mediation analysis, including the indirect effects and their significance levels.

<table>
<thead>
<tr>
<th>Mediation Path</th>
<th>Indirect Effect</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure -&gt; Technology Adoption -&gt; Financial Efficiency</td>
<td>0.216</td>
<td>0.034</td>
<td>7.008</td>
<td>0.000</td>
</tr>
<tr>
<td>Financial Literacy -&gt; Technology Adoption -&gt; Financial Efficiency</td>
<td>0.183</td>
<td>0.042</td>
<td>4.504</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The results reveal significant indirect effects of both capital structure and financial literacy on financial reporting efficiency through technology adoption. Specifically, the indirect effect of capital structure is 0.216 (t-value = 7.008, p < 0.01), indicating that a one-unit increase in capital structure leads to a 0.216-unit increase in financial reporting efficiency through technology adoption. Similarly, the indirect effect of financial literacy is 0.183 (t-value = 4.504, p < 0.01), suggesting that a one-unit increase in financial literacy results in a 0.183-unit increase in financial reporting efficiency through technology adoption.

6. Model Fit Assessment

The model fit assessment evaluates how well the structural model fits the data. Table 6 presents the goodness-of-fit indices for the structural model.

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMR (Standardized Root Mean Square Residual)</td>
<td>0.074</td>
</tr>
<tr>
<td>NFI (Normed Fit Index)</td>
<td>0.933</td>
</tr>
</tbody>
</table>

The results indicate a satisfactory fit of the structural model to the data. The Standardized Root Mean Square Residual (SRMR) value of 0.07 falls below the recommended threshold of 0.08, indicating a good fit between the model and the observed data. Additionally, the Normed Fit Index (NFI) value of 0.93 exceeds the threshold of 0.90, further indicating a good fit of the model.

Discussion

The results of the structural equation modeling analysis provide valuable insights into the determinants of financial reporting efficiency in the telecommunications industry in Indonesia.

The significant direct effects of capital structure, financial literacy, and technology adoption on financial reporting efficiency underscore the importance of these factors in shaping reporting practices within the sector. Companies with optimal capital structures, higher levels of financial literacy among employees, and greater adoption of advanced technologies tend to produce more accurate, transparent, and timely financial reports (Korniienko, 2023; Moore & Wüstenhagen, 2004; Salim & Susilowati, 2019).
The findings also highlight the mediating role of technology adoption in the relationships between capital structure, financial literacy, and financial reporting efficiency. Technology adoption serves as a pathway through which capital structure and financial literacy influence reporting efficiency. Companies that leverage advanced technologies in their financial reporting processes are better equipped to overcome the challenges associated with capital structure decisions and enhance the effectiveness of financial literacy initiatives.

1. Practical Implications

These findings have practical implications for telecommunications companies, policymakers, regulators, investors, and industry practitioners. Companies should prioritize investments in technology adoption and financial literacy training programs to improve reporting efficiency and compliance with regulatory requirements. Policymakers and regulators can promote transparency and accountability within the telecommunications sector by encouraging the adoption of best practices and standards for financial reporting.

2. Limitations and Future Research

It is essential to acknowledge the limitations of this study, including the cross-sectional nature of the data and the focus on the telecommunications industry in Indonesia. Future research could explore longitudinal data to examine changes in reporting efficiency over time and extend the analysis to other industries or geographic regions. Additionally, qualitative studies could provide deeper insights into the mechanisms underlying the relationships between capital structure, financial literacy, technology adoption, and financial reporting efficiency.

CONCLUSION

In conclusion, this research sheds light on the factors influencing financial reporting efficiency in the telecommunications industry in Indonesia. The study highlights the significance of capital structure, financial literacy, and technology adoption in shaping reporting practices within the sector. Companies with optimal capital structures, higher levels of financial literacy among employees, and greater adoption of advanced technologies tend to produce more accurate, transparent, and timely financial reports. Moreover, technology adoption serves as a pathway through which capital structure and financial literacy influence reporting efficiency. These findings underscore the importance of investments in technology adoption and financial literacy training programs to enhance reporting efficiency and compliance with regulatory requirements. By understanding and addressing these factors, stakeholders can promote transparency, accountability, and sustainable growth within the telecommunications industry in Indonesia.

Reference


