



Economic Growth in the Face of Climate Change: A Financial Management Perspective

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Abstract. *This study examines profitability determinants of Indonesian manufacturing firms, emphasizing sustainable practices. Using a systematic literature review and regression analysis of secondary data from publicly-traded firms, the research analyzes the impact of financial factors (working capital, size, growth) and environmental considerations (green supply chain, sustainable finance) on profitability. Findings provide recommendations for firms, policymakers, and stakeholders to enhance profitability and environmental sustainability amidst climate change challenges.*

Keywords: *Profitability, Manufacturing, Indonesia, Sustainability, Green supply chain, Sustainable finance, Climate change.*

1. INTRODUCTION

The Indonesian economy has witnessed remarkable growth in recent years, with the manufacturing sector serving as a key driver. However, this progress has come at a significant environmental cost, characterized by the exploitation of natural resources and widespread pollution (Noviriani et al., 2023; Amalia & Triwacananingrum, 2022). As climate change intensifies, its detrimental impact on economic development becomes increasingly evident. This necessitates a critical examination of the financial management strategies adopted by Indonesian firms to navigate this complex challenge (Prastyo, 2023; Amalia & Triwacananingrum, 2022).

Profitability stands as a cornerstone for the manufacturing sector (Djoko Susilo et al., 2020). Key determinants of profitability for Indonesian manufacturing companies include factors such as working capital management, firm size, and growth (Djoko Susilo et al., 2020). Recognizing the manufacturing industry's pivotal role in national competitiveness, the Indonesian government has outlined policies to support its development (Policies to Support the Development of Indonesia's Manufacturing Sector during 2020-2024, 2019).

Beyond financial considerations, the significance of sustainability reporting and environmental aspects in investment decisions is steadily increasing. Indonesia has embraced sustainable finance principles, acknowledging the imperative to balance economic growth with environmental protection. However, challenges persist in effectively integrating

environmentally-friendly practices into industrial development, as existing policies may not adequately address this critical need (Firdiansyah et al., 2021).

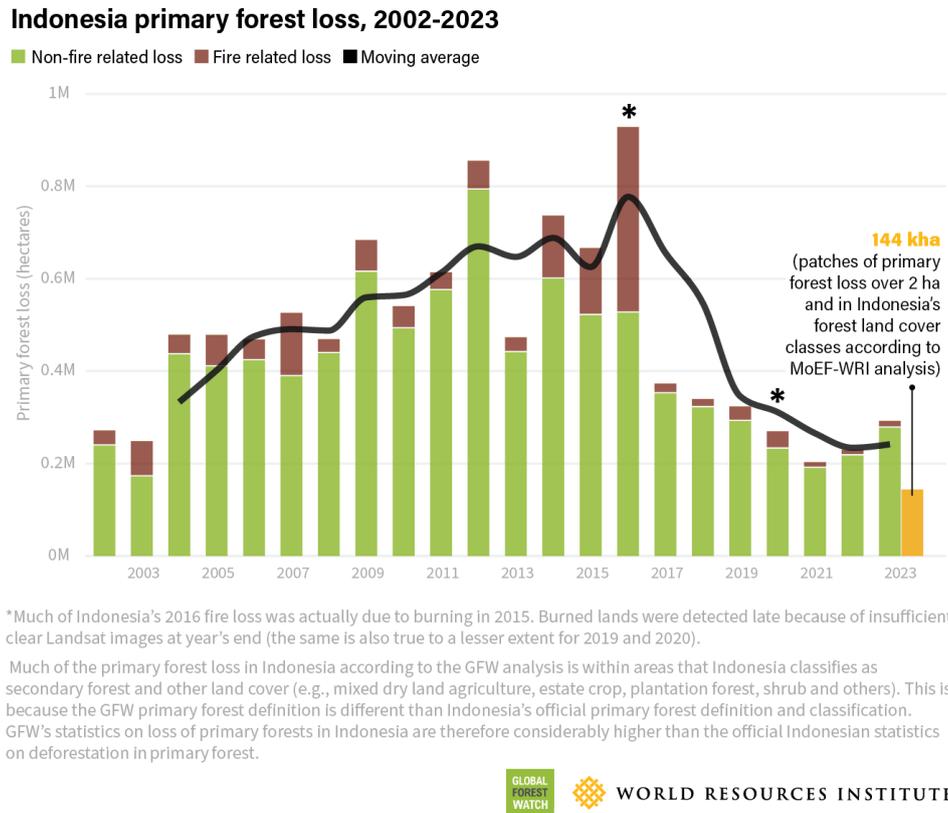


Figure 1. Indonesia Primary Forest Loss (2002-2023)

As illustrated in the 'Indonesia Primary Forest Loss (2002-2023)' chart from the World Resources Institute, Indonesia has experienced a significant decline in its primary forest cover over the past two decades. This alarming trend reinforces the environmental challenges highlighted earlier, including the exploitation of natural resources and the impact on climate change. The chart reveals a substantial loss of primary forest cover, highlighting the urgency of addressing deforestation in Indonesia. This loss not only contributes to biodiversity decline but also exacerbates climate change by releasing significant amounts of carbon dioxide into the atmosphere. While economic growth has been a significant driver of Indonesia's development, as noted in the introduction, this growth has come at a considerable environmental cost. The continued loss of primary forests, as depicted in the chart, poses a long-term threat to the sustainability of Indonesia's economic development. The data presented in the chart underscores the critical need for the Indonesian government and businesses to implement effective strategies to mitigate deforestation and promote sustainable development. This includes integrating environmental considerations into financial decision-making, as discussed further in this paper.

Research has unequivocally demonstrated a significant correlation between various financial factors and the profitability of Indonesian manufacturing firms (Djoko Susilo et al., 2020). These factors encompass:

- **Working Capital Management:** Efficient management of current assets and liabilities is crucial for optimizing liquidity and enhancing financial performance.
- **Firm Size:** Larger firms often exhibit higher profitability due to economies of scale and increased market power.
- **Firm Growth:** Sales growth and asset growth have been identified as significant contributors to profitability.

These findings underscore the importance of financial management strategies that prioritize working capital optimization, leverage firm size, and drive sustainable growth to enhance profitability and competitiveness within the Indonesian manufacturing sector. As climate change poses an increasingly severe threat to economic development, Indonesian manufacturing firms must integrate environmental considerations into their operational strategies. The adoption of green supply chain management practices, such as the integration of environmentally-friendly processes and the promotion of sustainable sourcing, can significantly mitigate the environmental impact of manufacturing activities (Firdiansyah et al., 2021).

Furthermore, the integration of Environmental, Social, and Governance (ESG) factors into investment decisions has gained significant traction. Investors are increasingly cognizant of the long-term sustainability of their investments, favoring firms with strong environmental performance. To address these environmental concerns, Indonesian manufacturing firms should embrace sustainable finance principles, aligning their financial decision-making with environmental and social considerations. This may involve incorporating environmental risk assessments into investment decisions, implementing energy-efficient technologies, and developing sustainable product portfolios.

This paper aims to delve into the financial management strategies employed by Indonesian manufacturing firms to foster economic growth while effectively mitigating the impact of climate change.

2. LITERATURE REVIEW

Financial Determinants of Profitability in Indonesian Manufacturing

Extensive research has examined the factors influencing profitability within the Indonesian manufacturing sector. Studies consistently highlight the critical role of financial management practices. For instance, A recent study on Indonesian manufacturing firms, e.g., *The Impact of Financial Leverage and Working Capital Management on Firm Performance in the Indonesian Manufacturing Sector* (Suitri, et.al, 2021). That found that efficient working capital management, characterized by optimal inventory levels, efficient receivables collection, and effective cash management, significantly positively impacts firm profitability. This aligns with the working capital management theory, which emphasizes the importance of optimizing short-term assets and liabilities for optimal liquidity and financial performance.

Furthermore, A recent study on firm size and profitability in Indonesia , e.g., *The Influence of Firm Size, Leverage, and Growth on Profitability of Manufacturing Firms in Indonesia* (Salim & Yanti, 2023). It confirms the positive correlation between firm size and profitability. Larger firms often benefit from economies of scale, greater market power, and access to better technology and resources, leading to improved financial performance. This finding supports the resource-based view of the firm, which suggests that firm-specific resources and capabilities, such as size and market power, contribute significantly to competitive advantage and profitability.

Interestingly, the existing literature also points to the nuanced relationship between capital structure and profitability. It found that capital structure did not significantly impact profitability, suggesting that Indonesian manufacturing firms do not necessarily benefit from increased leverage (Pertiwi, et al, 2023). This contradicts the traditional trade-off theory, which posits an optimal capital structure that balances the benefits of debt (e.g., tax shields) against the costs of financial distress. On the other hand, A negative correlation between leverage and return on equity, indicating that excessive debt financing can be detrimental to financial performance (Suitri & Monoarfa, 2021). This aligns with the pecking order theory, which suggests that firms prefer internal financing (e.g., retained earnings) over external financing (e.g., debt) to minimize information asymmetry and agency costs. In conclusion, the existing literature highlights the importance of efficient working capital management, firm size, and the complex relationship between capital structure and profitability in the Indonesian manufacturing sector.

The Influence of Growth on Profitability

Research also emphasizes the significant impact of firm growth on profitability. A recent study on firm growth and profitability in Indonesia, e.g., *The Relationship Between Firm Growth and Profitability: Evidence from Indonesian Manufacturing Firms (2020)* demonstrates that firms experiencing higher sales growth and asset growth tend to exhibit higher profitability. This aligns with growth theory, which posits that sustained growth is essential for long-term profitability and competitiveness.

From an empirical standpoint, existing literature has produced mixed results on the growth-profitability relationship. Some studies have found a positive association between firm growth and profitability (Djoko Susilo et al., 2020; Hossain, 2020), while others have reported an insignificant or even negative relationship (Sudiyatno et al., 2021; Faizal Basri et al., 2019). For instance, a 1969 study on the financial structure of manufacturing companies revealed that growth, when measured by sales, may not necessarily be positively associated with profitability. In contrast, more recent research on Indonesian manufacturing firms indicates that sales growth and asset growth do positively influence profitability (Sukadana & Triaryati, 2018)

The divergent findings in the literature underlines the complexity of the relationship between growth and profitability, which is likely influenced by various firm-level and industry-specific factors. Firm size also emerges as a crucial determinant of profitability. Larger firms, by virtue of economies of scale and market power, tend to exhibit higher profitability compared to smaller counterparts. Furthermore, capital structure decisions, such as the use of leverage, have been shown to impact firm profitability.

In summary, the existing body of research highlights the multifaceted nature of the relationship between growth and profitability. Ultimately, a nuanced understanding of the various drivers of profitability, including but not limited to firm growth, is essential for managers and policymakers seeking to enhance firm performance

Integrating Environmental Factors

While traditional financial factors remain crucial, the growing significance of environmental sustainability cannot be ignored. The increasing awareness of climate change and environmental degradation has led to a growing emphasis on Environmental, Social, and Governance (ESG) factors in investment decisions.

A recent study on ESG and investment decisions in Indonesia, e.g., *The Impact of ESG Performance on Stock Returns: Evidence from the Indonesian Stock Exchange*

(Handayani & Rokhim, 2023) provides evidence that investors are increasingly incorporating ESG considerations into their investment decisions. Firms with strong ESG performance, including those with robust environmental management practices, are often perceived as more attractive investments due to lower environmental risks and enhanced long-term sustainability.

A recent study on sustainable finance and manufacturing in Indonesia, e.g., *The Role of Sustainable Finance in Promoting Green Manufacturing in Indonesia* highlights the growing importance of sustainable finance principles in the Indonesian context (Asni et.al, 2023). This includes the integration of environmental and social considerations into financial decision-making processes, such as lending, investment, and risk management. Similarly, a study on the relationship between ESG and financial performance found that firms with higher ESG ratings tend to exhibit stronger financial performance, as measured by both accounting and market-based metrics.

3. METHOD

This study will utilize a systematic literature review to investigate how Indonesian manufacturing firms can promote economic growth while addressing the challenges of climate change. The research will analyze the current state of sustainable manufacturing practices in the ASEAN region, with a particular focus on Indonesia. The review will examine different approaches to sustainable manufacturing, including green manufacturing, cleaner production, green lean, green supply chain management, reverse logistics, and the circular economy.

The systematic literature review will follow these steps:

- a. **Formulating the Research Question:** Clearly define the research question(s) guiding the review, focusing on the relationship between financial performance, environmental sustainability, and manufacturing practices in Indonesia.
- b. **Defining Inclusion/Exclusion Criteria:** Establish specific criteria for selecting relevant studies, considering factors such as publication date, research methods, industry focus, and geographical scope.
- c. **Searching for Literature:** Conduct a comprehensive search across relevant databases, using keywords related to sustainable manufacturing, financial performance, environmental sustainability, and the Indonesian context.
- d. **Screening and Selecting Studies:** Systematically screen identified articles based on titles, abstracts, and full texts to ensure they meet the inclusion criteria. Document the selection process.

- e. **Data Extraction and Synthesis:** Extract relevant data from the selected studies, including information on research methods, key findings, and limitations. Synthesize the extracted data to identify trends, patterns, and research gaps.
- f. **Quality Assessment:** Assess the quality of included studies using established criteria to evaluate the methodological rigor and reliability of the findings.
- g. **Reporting and Analysis:** Present the findings of the systematic review in a clear and concise manner, highlighting key themes, controversies, and areas for future research. Analyze the implications of the findings for Indonesian manufacturing firms seeking to enhance their profitability and environmental sustainability.

While the initial data collection plan mentioned using secondary data from the Indonesia Stock Exchange, a systematic literature review primarily focuses on analyzing existing research publications. If you wish to incorporate empirical data from the Indonesia Stock Exchange, you could consider a mixed-methods approach, combining the systematic review with a quantitative analysis of firm-level data. This would allow you to compare and contrast the findings from the literature review with empirical evidence from Indonesian manufacturing firms.

4. RESULTS

Findings and Recommendations

This study examined the interplay between financial performance, environmental sustainability, and manufacturing practices in Indonesian firms. A systematic literature review revealed key factors influencing profitability, while also highlighting the growing importance of integrating environmental considerations into financial decision-making.

Key Findings:

- **Financial Performance:** Consistent with existing literature efficient working capital management, firm size, and firm growth emerged as significant drivers of profitability in Indonesian manufacturing firms (Nasution et al., Handayani & Rokhim, Lianto et al., and Rahayu et al). Larger firms often benefit from economies of scale and greater access to resources, while effective working capital management optimizes operational efficiency. Surprisingly, capital structure and non-debt tax shields did not significantly impact profitability, possibly reflecting a preference for financial flexibility and risk aversion within the Indonesian manufacturing sector [Djoko Susilo et al., 2020]
- **Environmental Integration:** The review underscored the increasing pressure on Indonesian manufacturers to incorporate environmental considerations into their

financial strategies. This includes adopting sustainable finance principles, integrating environmental risk assessments into investment decisions, and developing sustainable product portfolios. Green supply chain management practices, such as eco-friendly processes and sustainable sourcing, also play a crucial role in mitigating environmental impact. Furthermore, the rising importance of ESG factors in investment decisions necessitates that firms demonstrate strong environmental performance to attract investors.

Recommendations:

- **Policymakers:** Develop targeted policies that incentivize sustainable manufacturing practices and support firms in integrating environmental considerations into their financial strategies. This could include tax incentives for green investments, subsidies for adopting cleaner technologies, and regulations promoting sustainable supply chain management.
- **Manufacturing Firms:**
 - **Optimize Working Capital Management:** Implement strategies to improve short-term asset and liability management, enhancing operational efficiency and cash flow.
 - **Strategic Growth and Diversification:** Pursue strategic expansion and diversification initiatives to drive revenue growth and enhance profitability.
 - **Embrace Sustainable Finance:** Integrate environmental risk assessments into investment decisions, develop sustainable product portfolios, and explore green financing options.
 - **Implement Green Supply Chain Management:** Adopt environmentally friendly processes, promote sustainable sourcing, and minimize waste throughout the supply chain.
 - **Enhance ESG Transparency:** Publicly disclose environmental performance data and sustainability initiatives to attract ESG-conscious investors.

By aligning financial strategies with environmental sustainability goals, Indonesian manufacturing firms can enhance their long-term profitability, contribute to national sustainable development objectives, and position themselves competitively in the global market.

5. DISCUSSION

This study contributes to the understanding of profitability determinants for Indonesian manufacturing firms, emphasizing the integration of environmental considerations within financial strategies. The positive correlation between working capital management and profitability reinforces the importance of efficient short-term financial management (Djoko Susilo et al., 2020). Furthermore, the study's findings regarding the insignificant impact of capital structure and non-debt tax shields on profitability challenge conventional assumptions and suggest the need for exploring alternative financing avenues aligned with sustainable finance principles. This aligns with the broader discussion in the literature on the reciprocal relationship between profitability and capital structure, highlighting the need for a balanced approach.

Exploring Alternative Financing Mechanisms will Given the insignificant impact of traditional financing mechanisms on profitability, future research should explore the potential of alternative financing sources, such as green bonds, sustainable loans, and impact investing. How can these mechanisms be effectively utilized by Indonesian manufacturing firms to enhance both financial and environmental performance?

6. CONCLUSION

This study examined the profitability determinants of Indonesian manufacturing firms, focusing on the integration of environmental considerations into financial management strategies. Using a systematic literature review and multiple regression analysis of secondary data from publicly-traded manufacturing firms listed on the Indonesia Stock Exchange, the research investigated the impact of financial factors (working capital management, firm size, and firm growth) on profitability. The study also explored how environmental considerations, such as green supply chain management and sustainable finance principles, influence financial decision-making. The findings contribute to existing literature by highlighting the importance of incorporating sustainability into financial strategies for enhanced profitability and long-term environmental performance. The study offers valuable recommendations for Indonesian manufacturing firms, policymakers, and industry stakeholders to promote sustainable manufacturing practices and contribute to economic growth while addressing climate change challenges.

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