Corporate Adaptation and Financial Strategies in Indonesia's Downstream Processing Industries

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CORPORATE ADAPTATION AND FINANCIAL STRATEGIES IN INDONESIA'S DOWNSTREAM PROCESSING INDUSTRIES[*]

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ABSTRACT

This study explores the response of non-financial corporations and financial intermediaries to recent regulatory changes in Indonesia's downstream sector. It examines their participation, constraints, and funding requirements. The research employs a qualitative descriptive design, incorporating both a structured questionnaire and network analysis based on detailed financial data. The focus is on key sectors driving the development of downstream industries in Indonesia, such as palm oil processing, nickel-aluminum smelting, and vehicle assembly. The findings reveal that downstream processing generally enhances corporate performance, but the benefits are disproportionately skewed toward large enterprises. Small firms, on the other hand, encounter significant challenges, including limited processing capacity, inadequate funding, and restricted access to loans, which hinder their active participation in downstream activities. To fully realize the potential benefits of downstream processing, the study suggests that financial policies must be reformed to support businesses of all sizes across different stages of the supply chain. Additionally, improving access to financing is essential to enable smaller firms to participate more effectively in these activities. These measures would provide critical support to companies, particularly those operating at the lower levels of the value chain, thereby fostering economic growth at the local level.

Keywords: Down Streaming, Financing Policies, Industrial Manufacturing, Indonesia, Supply Chain Finance

A. INTRODUCTION

Indonesia has long recognized the vital role of advancing its industrial downstream processing policies in building a robust and resilient economy. This commitment is enshrined in the National Long-Term Development Plan (RPJPN) 2025–2045, which aims to drive dynamic industrialization by optimizing the use of the country's abundant natural resources and ensuring higher value is added at every stage—from extraction to final consumption. The focus is on expanding major sectors such as mining, oil and gas, agriculture, and fisheries, encompassing 21 key commodities.

Despite these efforts, Indonesia's GDP growth rate has remained stagnant at around 5% annually in recent years. Moreover, the contribution of the manufacturing sector to GDP has sharply declined, from 32% in 2002 to just 18% by the end of 2021. This trend underscores the urgent need to accelerate downstream processing, not only to stimulate growth within individual industries but also to enhance the overall performance of the national economy and mitigate the risks of premature deindustrialization.

Unprocessed materials constitute a significant portion of Indonesia's exports, accounting for approximately 55% of total outbound shipments. This heavy reliance on raw commodities often results in lower export earnings, as these products fetch lower prices compared to finished goods. However, recent strong increases in export values, particularly in the basic metal manufacturing industry, clearly demonstrate the benefits of engaging in more advanced value chain activities.

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[*]The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official opinion of Bank Indonesia, the Central Bank of Indonesia.

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Despite these positive developments, there is limited understanding of the involvement of non-financial firms in downstream activities, particularly regarding the challenges they face in terms of financing and capacity.

This study sets out to achieve three key objectives:

i. To assess the extent of corporate involvement in downstream activities and its implications for overall performance.
ii. To identify the development bottlenecks these firms encounter, as well as the financing requirements necessary to enhance downstream achievements.
iii. To examine the financial challenges faced by both large and small corporations engaged in lower-level processing.

Understanding the dynamics of corporate participation in downstream processing is crucial for formulating policies that effectively drive economic growth and support Indonesia's broader industrialization efforts. Additionally, this investigation offers valuable insights into the specific challenges faced by firms at different stages of their operations, including strategies to improve access to financing. Such insights are essential for developing targeted interventions that enhance financial inclusivity, thereby supporting the expansion and growth of businesses across the value chain.

B. LITERATURE REVIEW

The importance of downstream processing within the industrial sector has never been more critical, particularly for diversifying the economy and adding value to products. Shifting from exporting raw materials to producing finished goods can significantly boost export earnings and promote sustainable economic growth (IMF, 2023). Recent studies highlight the direct benefits of vertical integration, such as strengthening backward and forward linkages, which can help protect against volatile global commodity prices (IMF, 2023). Historically, Indonesia's economic growth has been heavily driven by raw commodity exports, making the country vulnerable to external shocks.

The Indonesian National Long-Term Development Plan (RPJPN) for 2025–2045 emphasizes the need to focus more on the manufacturing industry while reducing reliance on natural resource exports (Bappenas, 2022). However, despite numerous efforts by the Indonesian government over the years, significant implementation gaps remain, particularly in downstream interventions (OECD, 2023). A major challenge for corporate adaptation to downstream processing policies lies in financing and capacity building. Research indicates that many companies, especially small and medium-sized enterprises (SMEs), lack the necessary capital to develop downstream capabilities, contributing to high failure rates before projects even get off the ground (ADB, 2022). One common challenge in developing countries like Indonesia is the absence of adequate financial mechanisms, which undermines the successful implementation of downstream strategies (World Bank, 2023).

In addition to being expensive, incorporating technological updates and human resource development into corporate strategies for downstream activities poses several challenges. Corporations must manage complex supply chains and invest in risk management to mitigate the uncertainties of volatile global markets (Kang et al., 2023). Moreover, to compete internationally, companies are under constant pressure to invest heavily in technology and innovation, which is essential to meet global standards (Chen et al., 2022).

Indonesia can learn valuable lessons from other countries that have successfully implemented downstream policies. India, for instance, has become a key destination for multinational firms attracted by production-linked incentives that reward domestic output (Sajeev, 2023). The United States, which dominates the global market for electronic components, has implemented programs channeling investments worth billions of dollars into sectors like electronics and pharmaceuticals,

thereby enhancing industrial growth and resilience against external shocks. Similarly, Brazil's approach to agricultural industrialization has focused on domestic processing of farm produce, significantly improving export earnings from this sector (Alves & Silva, 2023). These examples demonstrate how targeted government actions and business incentives can drive corporate adaptation to new production techniques.

However, financing remains a major hurdle for Indonesian companies seeking to engage in downstream activities. Banks and other financial institutions are often reluctant to provide loans or banking services for downstream investments due to the perceived risks and long payback periods involved (OECD, 2023). As a result, many companies must rely on internal savings or seek funds from external sources, such as venture capital, which is often beyond the reach of smaller businesses (UNIDO, 2023). There is growing interest in innovative financing models, such as green bonds and impact investing, which align with global trends toward sustainability and environmental responsibility (Ghosh & Rao, 2023). These financial mechanisms could potentially support downstream processing activities, particularly in sectors like renewable energy and sustainable agriculture, which are gaining traction in Indonesia's industrial landscape.

Despite the extensive literature on this topic, significant gaps in knowledge remain. For example, there is little detailed information on the specific challenges SMEs face when financing their ventures into downstream business projects in Indonesia. Although various studies have identified different funding obstacles, few have provided insights into how existing financial instruments or policy measures can effectively address these challenges (World Bank, 2023). Another gap in the literature concerns the role of digital technologies and innovations in supporting downstream processing. As we move further into the era of Industry 4.0, there is a pressing need for more research on how digital transformation can enhance efficiency and competitiveness across the entire supply chain, from raw material sourcing to the delivery of finished products.

C. RESEARCH METHODOLOGY

This research employs a qualitative descriptive approach to explore how the corporate sector engages in downstream processing across key industries in Indonesia. This methodology is well-suited for examining complex phenomena, such as the adaptation of non-financial firms and financial intermediaries to new policy environments, by leveraging contextualized information. The primary data collection tool was an online survey conducted with 900 non-financial enterprises across various sectors, selected based on the accessibility of their websites or other digital platforms. The chosen sectors, including the automotive industry, palm oil, and nickel-aluminum, were identified for their significance in Indonesia's investment planning and their potential for growth in downstream processing.

The survey included several sections:

- Business Profile: Gathered general information about the companies, such as size, location, and other demographic details.
- Downstream Activities Development: Examined the level and nature of each company's integration within lower levels of the supply chain.
- Corporate Performance: Assessed the impact of downstream processing on sales volumes, profitability, and debt servicing capacity.
- Employment Impacts: Explored changes in staffing levels and skill development needs throughout the value addition stages, as well as the associated funding requirements.
- Modalities and Policy Support: Identified the types of policies most needed by businesses involved in downstream processing.

Participation in the survey was voluntary, allowing for follow-up with respondents when clarification was needed. Data analysis involved both qualitative and quantitative methods. Descriptive statistics were used to synthesize the findings, providing an overview of participation rates in various activities, the financing models applied, and the challenges encountered.

Additionally, network analysis was employed to illustrate the relationships between different manufacturing sectors, particularly those linked through common customers. Financial transaction records from Q3 2019 back to 2017 were collected to identify key nodes and missing links in supply chains. Gephi, an open-source software primarily used for social network analysis, was utilized for network visualization and analysis.

To ensure the reliability and validity of the survey instrument, pilot tests were conducted with a small group of companies before the broader rollout. This process helped identify areas needing clarification or adjustment to improve understanding during data collection. Triangulation was also employed; for instance, responses from the survey were cross-checked against financial statements and industry reports. This approach enhanced the trustworthiness of the results and provided a broader perspective by incorporating different types and sources of data, even when they only partially overlapped. However, it's important to acknowledge the study's limitations. Self-reported information may be subject to biases, and the findings from qualitative research cannot easily be generalized beyond the specific cases studied, which could limit the broader applicability of the results.

D. RESULTS AND DISCUSSION

Survey Response and Participant Profile

Out of the 900 questionnaires distributed to various corporations, a total of 605 were completed, yielding a response rate of 67.2%. The respondents represented a wide range of sectors, with the food and beverage sector accounting for the largest share at 26%, followed by the rubber, wood, chemical, and metal sector at 29%, and the textile and apparel sector at 12%. These responses came from all regions of Indonesia, ensuring that the findings are broadly representative.

The analysis revealed that approximately 55% of respondents are engaged in downstream operations. However, there is a notable disparity between large and small companies—72% of large companies participate in downstream activities, compared to just 38% of small firms. This gap highlights the challenges smaller firms face in expanding into downstream processing, including limited processing capacity and high capital requirements. Overall, the study found that downstream processing generally enhances corporate performance. Companies that engage in downstream activities tend to see increased sales, driven by product diversification and improved quality. For example, the majority of firms involved in downstream processing reported a more than 1.5-fold increase in their debt repayment capacity.

Table 1 Survey Results on Respondent Distribution and Company's Downstream Involvement

		Industry	**Farming**	**Plantation**	**Fisheries**	**Others**	**Total**
Respondent Distributions by Region	Sumatera	11%	3%	7%	1%	3%	25%
	Jawa	27%	10%	5%	3%	1%	46%
	Bali Nusra	2%	4%	1%	1%	0%	8%
	Kalimantan	3%	1%	2%	0%	1%	7%
	Sulampua	4%	3%	3%	3%	1%	14%
Engaging in Downstream Activity	Large Corps	25%	5%	25%	11%	6%	72%
	Small Corps	13%	2%	10%	5%	8%	38%

Challenges in Downstream Development

Downstream development refers to the processes and activities that add value to raw materials by transforming them into finished products or goods that can be sold to end consumers. Corporations could reach and connect various geographic regions through further processing which in the long run could also provide a synergy between local industry's R&D, social capital and economic growth (Juhro, et.al, 2022). While downstream processing offers significant economic benefits, including job creation, increased exports, and enhanced industrial growth, it also presents notable challenges, especially for smaller firms. This study explores these challenges in detail, provides empirical evidence, and examines the sector-specific impacts on industries such as palm oil, nickel-aluminum, and automotive in Indonesia.

Smaller firms face significant difficulties in securing financing for downstream activities. Access to capital is often constrained by the lack of collateral, limited credit histories, and the high-interest rates associated with business loans. This limitation is exacerbated by the substantial upfront investment required for advanced processing machinery, which many small and medium-sized enterprises (SMEs) cannot afford without external funding. According to a survey conducted among small businesses in Indonesia, 62% of respondents reported that they had not engaged in downstream activities due to financial constraints. Furthermore, 34% of these firms are currently seeking funding, indicating a strong interest in expanding downstream capabilities if adequate financing becomes available.

The cost of acquiring and maintaining advanced processing equipment is prohibitive for many smaller firms. These costs not only include the initial purchase price but also ongoing expenses related to maintenance, repairs, and upgrades. The lack of economies of scale further aggravates this challenge, as smaller firms are unable to spread these costs over a large production volume. Feasibility studies conducted by 41% of firms planning to expand downstream operations reveal that the high cost of machinery remains a primary barrier. This is especially true for industries that require specialized equipment, such as the automotive and nickel-aluminum sectors.

Uncertainty about market demand for derivative products discourages firms from investing in downstream processing. This is particularly challenging in industries where consumer preferences and market trends are volatile, making it difficult to predict future demand. A survey of firms hesitant to expand their downstream capacities found that concerns about market demand were a significant deterrent. Despite the potential for higher margins, companies are wary of overcommitting resources to products that may not find a market.

Impact on Employment and Human Resources

Downstream activities have a significant positive impact on employment and the development of human capital. The demand for labor increases as firms expand their downstream processing capabilities, leading to job creation and the need for specialized skills. As companies invest in downstream activities, the demand for skilled labor rises. This trend is evident across multiple industries, with 79% of companies reporting an increase in labor demand due to their downstream operations. In a survey of Indonesian firms engaged in downstream processing, 79% reported an increase in their workforce, directly attributable to their expansion into value-added activities.

To meet the growing demand for specialized skills, companies have intensified their training programs and established strategic partnerships with human resource agencies. This has led to significant improvements in the skills of the local workforce. Fifty percent of organizations surveyed noted that their downstream activities had directly contributed to improvements in the skills of the local workforce. This development is crucial for sustaining long-term industrial growth and competitiveness.

Financing Structures and Needs

The financial structures supporting downstream activities are primarily reliant on internal funds, with retained earnings being the most common source of funding. However, this reliance is not ideal, and there is a growing need for more diversified financing options. A significant proportion of firms (72.7%) rely on retained earnings to finance their day-to-day operations and expansion into downstream processing. While this approach provides a measure of financial independence, it also limits the scale and speed of expansion. Based on the survey, 72.7% indicated that retained earnings were their primary source of funding for downstream activities. This reliance on internal funds restricts their ability to scale operations quickly or invest in new technologies.

Local loans are the second most common source of financing, with approximately 80% of current and anticipated future financial needs met through local lending institutions. The proximity of these institutions to corporate offices and commercial hubs makes them a convenient option. However, there remains a significant gap between the financing solutions currently available and the integrated, value-chain-focused financing that businesses desire. The study found that while 80% of financial needs are currently met through local loans, there is a strong demand for more integrated financing solutions. This includes value chain financing and non-cash loans, which are better suited to the unique needs of downstream processing activities.

Table 2 Corporate's Funding Source and Structure for Downstream Processing

	Source of Funding		**External Funding Structure**			
	Internal	**External**	**Domestic debt**	**Foreign debt**	**Bonds**	**Others**
Current	72.7%	27.3%	83.5%	5.3%	1.9%	9.3%
Expectations	52.9%	47.1%	77.9%	4.7%	7.1%	10.5%

Sector-Specific Discoveries: Palm Oil, Nickel-Aluminum, and Automotive Industries

i. Palm Oil Industry: The Indonesian palm oil industry is a major contributor to the country's non-oil exports, with a well-established supply chain dominated by local companies. However, there is still a gap in the vertical integration of the supply chain, where semi-finished goods are exported and then re-imported as finished products. Further downstream development could help retain more value within the national economy. An analysis of the palm oil industry's export and import data reveals that further downstream development could significantly increase the value retained within Indonesia. By enhancing vertical integration, the industry could reduce its dependence on foreign markets for finished products.
ii. Nickel-Aluminum Industry: In its downstream strategy, Indonesia places significant importance on nickel and aluminum, given the global demand for electric vehicle's materials manufacturing. While domestic players dominate the supply chain, much of the processing is still dependent on foreign firms. Increasing local capacity and shortening supply chains could enhance gross margins at every stage of the process. The study found that while domestic players dominate the early stages of the supply chain, foreign firms control much of the downstream processing. Increasing local capacity for downstream activities could enhance gross margins and reduce the industry's reliance on foreign partners.
iii. Automotive Industry: The Indonesian automotive sector is largely dominated by multinational companies, leading to high levels of imports within the supply chain, especially for key components like engines and transmissions. Many parts used in vehicle assembly are sourced from abroad, due to a lack of domestic manufacturing capacity and competitiveness. Data on the automotive sector's import and production patterns indicate that a significant portion of vehicle components are sourced from abroad. Developing domestic manufacturing capabilities

for these components could reduce the industry's dependence on imports and increase its global competitiveness.

The findings of this study have several policy implications. First, there is a clear need for more structured financing policies that address the unique needs of firms engaged in downstream processing. This includes developing different types of financing schemes tailored to various stages of the supply chain and to firms of different sizes. Second, it is crucial to promote inclusivity within the sector by enhancing financial accessibility for small and medium-sized enterprises (SMEs) involved in downstream activities. Incentives could be targeted at financial intermediaries through measures such as macroprudential liquidity regulations, which would encourage lending to SMEs. Finally, the government should consider policies aimed at filling gaps in major sectors like the palm oil, nickel-aluminum, and automotive industries. This could involve supporting the establishment of processing facilities or encouraging foreign direct investment in underdeveloped downstream sectors, thereby increasing the amount of value-added processing done within Indonesia.

Comparison of Downstream Processing Development in Emerging Countries

Countries with developed industrial downstream processing capacity can supply domestic value-added by exporting higher value intermediate products to other economies particularly supporting the global value chain. They can also use intermediate inputs from domestic production or importing from other economies to produce high value final goods. This section analyzes how Indonesia's downstream processing comparative advantage relative to other emerging countries such as China, Vietnam, and India specifically in palm oil, nickel-aluminum, and automotive industries. The overall comparisons are in the Table 3 below.

Table 3 Cross-country Comparisons of Downstream Processing Development

	Indonesia	**Vietnam**	**India**	**China**
Use of imported inputs	Moderate	Low	High	High
Type of exports	Moderate processing exporters	Moderate processing exporters	High processing exporters	High processing exporters
Type of Investment	Domestic loans and joint venture	Majority FDI	Corporate bonds and FDI	Domestic loans, FDI, and equity
GVC Participations	Low	Moderate	Moderate	High
Incentives Policies	Macroprudential Liquidity, Tax cut	Regional & export-oriented incentives	Production-linked	Industrial and export processing zone

The processing of imported intermediate inputs for re-export has become a significant industry in some emerging countries, particularly China and India. While this approach can lead to more efficient overall processes, the heavy reliance on offshore supply chains could disrupt production continuity. Indonesia and Vietnam, however, are capitalizing on their abundant raw materials, such as mineral deposits, to produce higher-value products and attract more investment. In Indonesia, enhancing investment, particularly in infrastructure development, has long been a top priority. Similarly, Vietnam has been focused on mobilizing capital for the development of strategic infrastructure. Both countries aim to increase the processing of raw materials into intermediate inputs to meet the demands of various global industries.

Investment sourcing strategies vary across these countries. Indonesia relies on domestic loans and joint ventures, which could reflect a strategy to encourage local business participation and retain economic benefits within the country. Vietnam, however, predominantly depends on foreign direct investment (FDI), which might be aimed at attracting external expertise and capital to boost its processing industries. India uses a mix of corporate bonds and FDI, suggesting a more diversified approach to investment, while China combines domestic loans, FDI, and equity, indicating a comprehensive strategy to support its extensive processing sector. In terms of Global Value Chain (GVC) participations, China, India, and Vietnam has always been more integrated into international networks while Indonesia still has some ground to cover considering its potential of future stage of industrial development. Each country employs different incentive policies to support its processing sector. Indonesia uses macroprudential liquidity measures and tax cuts, which may aim to stabilize the financial environment and reduce costs for businesses. Vietnam offers regional and export-oriented incentives, likely to attract investment to specific areas and boost export activity. India's production-linked incentives suggest a focus on increasing output efficiency, while China's use of industrial and export processing zones reflects its strategy to create specialized areas with favorable conditions for processing industries.

D. CONCLUSION

This study explores how non-financial corporations and financial intermediaries in Indonesia have adapted to industrial policies aimed at driving industrialization from upstream processes down to downstream activities. The focus is on corporate participation, the challenges they face, and their funding needs. The findings reveal that most activities at this stage generally enhance business performance, particularly in terms of sales growth and capacity building. However, there are still significant hurdles, such as limited processing capacity, high capital costs, and restricted access to finance, which have prevented many enterprises from fully engaging in downstream processing.

The analysis of the palm oil, nickel-aluminum, and automotive sectors highlights gaps in the supply chains, where raw materials or semi-finished products are exported and then re-imported as finished goods. This suggests a strong potential for further development in value addition within the country, particularly at lower levels of the supply chain. In light of these findings, several policy recommendations have been proposed: (i) Structured Financing Policies: It is essential to develop various financing schemes tailored to different stages of the supply chain and to firms of varying sizes. These could include value chain financing, non-cash loans, and avalist lines specifically designed for SMEs. (ii) Enhanced Financial Access for SMEs: Targeted incentives should be provided to financial intermediaries, such as through macroprudential liquidity regulations, to encourage lending to small businesses involved in downstream processing. (iii) Incentivizing Further Processing: Measures should be taken to promote the establishment of local processing facilities and reduce reliance on imported finished products by developing these products domestically, thereby enhancing value addition within Indonesia's economy. Comparing with other countries, Indonesia have its advantage particularly on utilizing the abundance of mineral deposits while at the same time optimizing the investment opportunities which aligns with the incentives policy strategies.

Further research could explore the long-term effects of these policy interventions on the competitiveness of Indonesia's economy in global markets. Additionally, a deeper analysis of the financing challenges faced by SMEs during downstream processing could offer valuable insights for policy formulation. Moreover, investigating technology adoption, utilization, and innovation strategies could help overcome barriers to corporate participation in downstream activities, ultimately enhancing their competitiveness and survival in an increasingly dynamic business environment.

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