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Enhancing Competitiveness in the Indonesian Pulp Industry: A Strategic Analysis and Value Chain Mapping Approach

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ABSTRACT

The pulp and paper sector plays a crucial role in the national economy, acting as a significant source of foreign exchange earnings within the non-oil and gas sector. Despite this, challenges remain in exporting, particularly in managing the high volume of upstream industry products (pulp) and optimizing downstream operations. There is still potential for improvement to enhance the added value through the processing industry of pulp derivatives. This study aims to analyze the current state of the pulp and paper industry in Indonesia, map the value chain of the paper industry, explore strategic issues pertaining to the pulp sector, and develop strategies to boost the competitiveness of the Indonesian pulp industry. Conducted using qualitative methods, this research relies on both primary and secondary data from various sources and literature. Data analysis employed the PESTLE, VRIO, and SWOT approaches. The findings indicate that the pulp industry plays a vital role in Indonesia's economy, as demonstrated by various economic, social, and other indicators. Presently, the industry is concentrated in Sumatra and predominantly driven by foreign direct investment (FDI). The pulp (and paper) supply chain operates on a pull-based model, with supply chain actors including raw material suppliers, manufacturers, distributors, and consumers. The issue of downstream strategy is addressed by designing alternative strategies across the pulp industry value chain to enhance value capture. These alternative strategies advocate for improvements from the upstream sector and processes to the downstream, including regulatory policies, supply assurance, process efficiency, product differentiation, and diversification in line with market demand.

Keywords: Strategy, Downstream, Pulp and paper industry, SWOT, Value chain.

1. INTRODUCTION

Indonesia ranks among the world's top producers of pulp and paper, holding the eighth position for pulp and sixth for paper in 2021, leading in ASEAN, as reported by the Ministry of Industry (2022). The pulp and paper industry's contribution to the non-oil and gas Gross Domestic Product (GDP) in 2021 was 3.84%, according to BPS (2022) [1]. In 2021, this strategic industry achieved an export value of USD 3.28 billion for pulp and USD 4.22 billion for paper. Despite the challenges posed by COVID-19 and economic downturns, the pulp and paper industry has shown resilience, with contraction rates that are comparatively lower than those of other sectors. Figure 1 illustrates that the paper and paper goods industry experienced a contraction of 2.67% in Q1 2021, indicating a relatively favorable performance amidst broader economic downturns [2].

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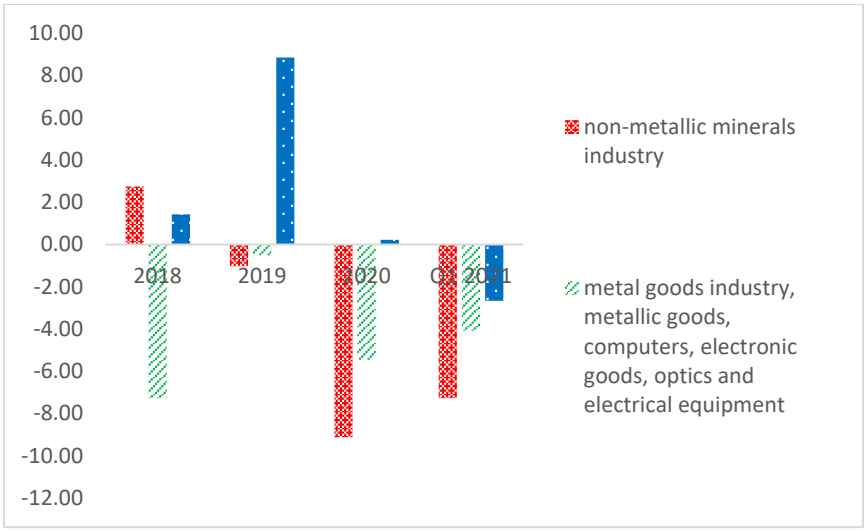
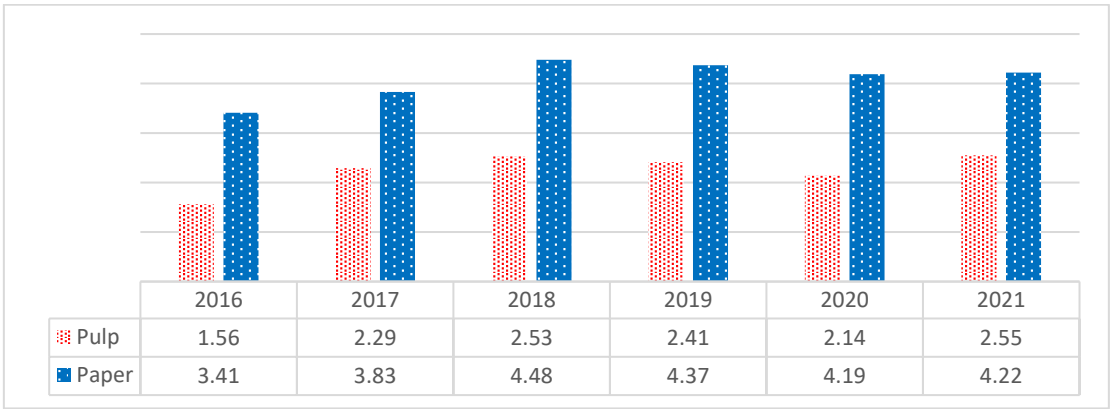


Figure 1: Industry sector growth in Quarter 1 2021. (Source: Ministry of Industry Pusdatin, 2021) [2].

The prominence of Indonesia's pulp and paper industry is closely linked to its rich forest resources, which serve as the primary source of raw materials. Additionally, an abundance of alternative raw materials from agricultural waste, supported by a tropical climate that promotes rapid plant growth, further strengthens the industry. Indonesia possesses the world's third-largest forest potential, trailing only Brazil and Zaire, in terms of area and potential production of forest products. This comparative advantage places Indonesia in a favorable position within the global pulp and paper industry, surpassing many other producing countries.

The pulp and paper industry is essential for the community and the country. Various community life activities utilize the commodity products of this industry, ranging from households, education, trade, industry, crafts, and others. From an economic perspective, this industry is also an industry that absorbs much labor. In 2021, there were 1,261,000 workers involved in this industry [1]. APKI data (2022) [3] illustrates that the trend of pulp and paper exports from 2016 to 2021 has fluctuated. The total value of pulp and paper exports increased over these five years. From 2016-2019 [4],[5], there was a 62% increase in pulp exports, from USD 1.56 billion (2016) to USD 2.53 billion (2019), which then declined in 2020 due to the pandemic 11.2%, and improved in 2021 with a 19% increase to USD 2.55 billion [1], [3]. Similar conditions were also experienced in the value of paper exports. The value of paper exports was highest in 2018, reaching USD 4.48 billion, which then decreased during the pandemic by 0.7% in 2020, bringing the export value to USD 4.19 billion, and then improved in 2021 to USD 4.22 billion [1], [3]. Figure 2 shows the trend in the value of Indonesia's pulp and paper exports for 2016-2021.



	2016	2017	2018	2019	2020	2021
Pulp	1.56	2.29	2.53	2.41	2.14	2.55
Paper	3.41	3.83	4.48	4.37	4.19	4.22

Figure 2: Trends in pulp and paper export value (USD billion) for 2016-2021. (Source: BPS 2022, APKI 2022).

When viewed in terms of export volume, the export value above has a similar magnitude. BPS data (2022) [1] shows that in 2021, the export volume of pulp reached 5.21 million tons, while the volume of paper reached 5.41 million tons. These figures show that the volume of exports in the form of raw materials (pulp) is still very high. Consequently, opportunities for added value can still be encouraged so that it is no longer in the form of upstream products (pulp) that are exported but has become a downstream product item (various types of paper). For this reason, a downstream strategy is needed so that Indonesia can enjoy added value along the pulp industry value chain.

Downstreaming is anticipated to enhance the Indonesian pulp industry's responsiveness to market demands by integrating production, processing, and marketing activities. This approach is not only a strategy to navigate the turbulent and competitive business landscape but also a necessity for the industry to bolster its market competitiveness. Technological advancements, heightened environmental consciousness, and shifts in lifestyle patterns have escalated demands for high-quality products and services, presenting new challenges. To remain adaptable, the pulp industry must adopt a value chain strategy. By prioritizing downstream activities, the sector aims to maximize profit opportunities, which are defined as the difference between the costs of inputs and the value of outputs [4]. Understanding competitiveness is contingent upon grasping the flow of materials and value chains that begin with forest resources and culminate in paper products. Critical factors include access to raw materials and markets, along with the capability to establish linkages between them, all of which are crucial for sustaining competitiveness.

The considerable potential for enhancing competitiveness through the downstream pulp industry highlights the importance of conducting this research. By understanding and leveraging this potential, innovative strategies can be developed to improve productivity and competitiveness within the pulp industry. It is crucial to identify market mechanisms and pursue gradual downstreaming as key steps towards promoting competitiveness and ensuring sustainability.

Based on the above background, some objectives are organized as follows: (1) analyze the existing conditions of the pulp industry in Indonesia, (2) mapping the value chain in Indonesia's pulp industry, (3) analyze the strategic issues of downstream pulp industry in Indonesia, and (4) design a strategy to strengthen the competitiveness of Indonesia's pulp industry.

2. LITERATURE REVIEW

2.1 Value Chain

Value chains include the concept of product-to-output, which includes raw material procurement, manufacturing functions, and marketing activities [7]. The Agriculture and Food Council (2004) [8] states that the essential characteristic of a value chain is that it focuses on market collaboration, where different business enterprises work together to produce and market products and services effectively and efficiently. The vertically aligned position of firms means that firms are connected from one end of the primary production process through processing to the final marketing stage, where consumers buy the finished product. At each stage, the value of the product increases. This differs from other alliances, such as a collection of agricultural producers consolidating supply, which would be considered a horizontal alliance, as no value is added to the product. Usually, the term value chain is applied when a vertical alliance includes three or more companies, known as links in the supply chain. A value chain is different from a supply chain. Table 1 shows the differences between the two.

Table 1: Differences between the value chain and supply chain.

	Supply chain	Value chain
Information Sharing	Little or no	Extensive
Value focus	Cost/price	Value/Quality
Product	Commodity	Product differentiation
Relationship	Supply push	Demand-pull
Organizational structure	independent	interdependent
Philosophy	Self-optimization	Chain optimization

Furthermore, the Agriculture and Food Council (2004) [8] mentioned three things that become the background of a business conducting a value chain: improving quality, increasing system efficiency, and developing product differentiation.

2.2 Strategic Management

Strategic management is a concept related to the time factor, involving a continuous process of achieving a goal in the environment it faces. Hitt et al. (2004) [9] reported that the strategic management process involves a full range of commitments, decisions, and actions needed to achieve strategic competitiveness and earn greater profits. Wheelen and Hunger (2012) [10] say that strategic management has four essential elements: environmental scanning, strategy formulation, strategy implementation, and evaluation and control.

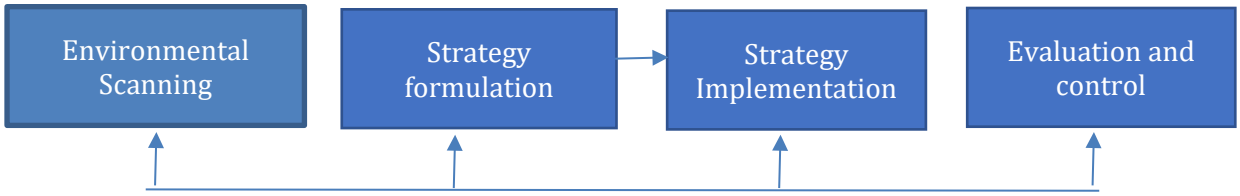


Figure 3: Basic elements of strategic management.

Environmental scanning analyzes the internal and external environment. The external environment is an environment that has implications for the operations of a business. The complex, uncertain, and globally oriented external environment is certainly something that must be considered in business. In analyzing this external environment, researchers used the PESTLE framework.

In this case, the internal environment has direct implications for the business. The internal environment audit collects information on management, marketing, finance, production operations, research, and development of business management systems. Hitt et al. (2004) [9] suggest that the analysis of the internal environment includes an analysis of the company's resources, capabilities, and core competencies. In achieving competitiveness, not all resources and capabilities of the organization have the potential to become the basis of competitive advantage. Barney (1991) [11] stated that a sustainable competitive advantage will only exist if other parties' efforts fail to imitate the advantage. Newbert (2008) [12] reported that the resource-based approach will help companies gain sustainable competitive advantage and has been recognized as having a positive effect on management research. In this study, the internal environment was analyzed using the VRIO approach.

2.3 PESTLE Analysis

PESTLE analysis (Politic, Economy, Social, Technology, Legal, and Environment) is a framework used to analyze external factors that affect a business. Cadle et al. (2010) [13] explained that the PESTLE framework involves identifying six factors, namely:

a) Politics: Government political factors can change through policy changes, priorities, or initiatives from the new government. These changes originating from government politics can also impact the running of a business.
b) Economic: Economic factors are not limited only to the country of origin. As world trade continues to grow, economic difficulties in one country can also impact other countries and even globally, for example, the economic growth rate or confidence of the business market.
c) Socio-cultural; Socio-cultural factors come from customers or potential customers. Once it has had a significant impact, this factor can only be predicted or identified.
d) Technology: This arises because of technological developments. There are two types of technological changes: information technology development and specific technologies that become an industry or market, such as additional devices in the manufacturing industry.
e) Law: It is essential to consider factors arising from changes in legislation. Legal compliance is vital, so business analysis is conducted to ensure compliance with specific laws or regulations. A legal factor analysis aims to recognize the laws that impact the organization, even though they are from another country. However, the applicable law is still where the organization is established.
f) Environment: The last factor is the environment. Environment-related examples, such as impacts arising from concerns about the natural environment, include increased concerns about packaging issues and increased pollution.

2.4 VRIO Analysis

VRIO analysis was developed as a practical guide to help evaluate resources [14]. Hitt et al. (2004) [9] suggested that internal environmental analysis includes a business's resources, capabilities, and core competencies. Resources are often defined as the inputs a business organization requires to conduct production or operations. Barney (2007) [11] listed all assets, capabilities, organizational processes, company attributes, information, and knowledge as resources. If some internal parts of the company are resources for the company, then the VRIO framework analyzes them in terms of:

i. Resources and capabilities are valuable and enable one to capture opportunities and overcome challenges (valuable capabilities).
ii. The resources are challenging to obtain in the market and are owned by a small part of the company (rare capabilities)
iii. Not easy to imitate (imperfectly imitable capabilities)
iv. The company's conditions or policies can support and utilize all resources that have the previous character (organization)

The resource-based view of analysis emphasizes the improvement of competitive advantage derived from the strategic resources of the organization [11]. The VRIO framework can be seen in Figure 4.

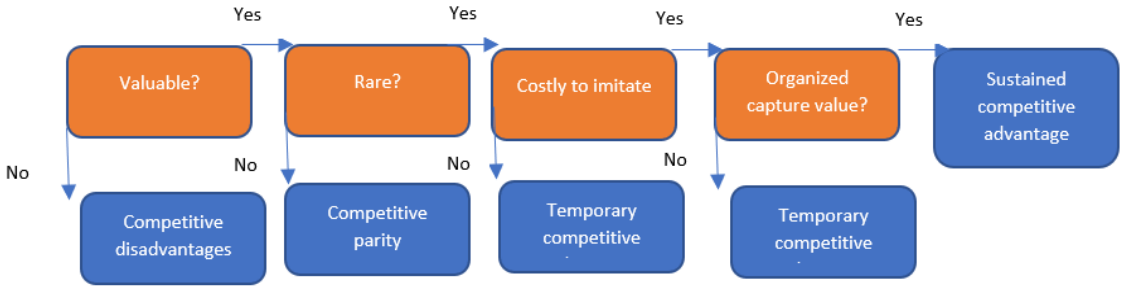


Figure 4: VRIO framework.

2.5 SWOT Analysis

The SWOT matrix was developed by David (1989) [15] as a model in the form of a diagram that displays a matrix consisting of six boxes, the top two boxes are internal factors, namely the strengths and weaknesses of the organization and the two leftmost boxes are the opportunities and threats faced by the company [16]. Based on the SWOT matrix, four strategies are shown from the SWOT analysis results [16], namely: 1). S-O strategy used to take advantage of opportunities in the external environment; 2). W-O strategy aims to improve internal weaknesses by utilizing opportunities from the external environment; 3). S-T strategy is used to avoid or at least minimize the impact of threats from the external environment; 4). W-T strategy minimizes internal weaknesses and avoids threats from the external environment.

3. METHODOLOGY

This research uses a qualitative methodology mixed with a descriptive approach, aimed at delineating the phenomena that occur and the factors influencing these phenomena. This approach will provide researchers with the foundation necessary to propose alternative strategies for addressing the problems encountered by the subject of the study. Descriptive research is a methodological approach designed to describe existing phenomena comprehensively. The study was carried out in Bogor from September 1 to September 29, 2023.

3.1 Data Source and Analysis

Data can be categorized into primary data and secondary data. Secondary data is obtained from various sources of literature, APKI reports, Ministry of Industry studies, and other relevant sources. Primary data was obtained from in-depth interviews with several respondents consisting of the Directorate of Forest Products and Plantations of the Ministry of Industry, agribusiness practitioners, and two academics. Data analysis was carried out with a descriptive approach using the PESTLE, VRIO, and SWOT frameworks.

4. RESULTS AND DISCUSSION

4.1 Existing Conditions of the Indonesian Pulp Industry

Indonesia's pulp and paper industry spans across various islands, except for Papua. The industry comprises companies engaged in pulp production, as well as those that are integrated with paper production. According to APKI data (2022), there are 110 pulp and paper companies with operating licenses. Out of this total, 29 companies have ceased operations for various reasons. Furthermore, APKI data (2022) reveals that the installed capacity of the Indonesian pulp industry stands at 12.13 million tons, with a production capacity of 10.54 million tons. In 2021, BPS [17] reported that the value of pulp exports amounted to USD 3.28 billion, while imports were valued at USD 1.07 billion. Table 3 presents the distribution of pulp and paper companies by type of industry, noting that there are 11 companies dedicated to pulp production in Indonesia.

Table 3: Types of Pulp and Paper Industries based on activity.

Type of industry	Active	Not Active
Pulp	5	4
Integrated Pulp and Paper	6	2
Paper	70	23
Number of companies with operating licenses	**81**	**29**

Source: APKI (2022).

If mapped further, the distribution of pulp and paper industries in Indonesia, both those still active and those no longer operating, based on their location, can be seen to be primarily located in Sumatra and Java. Figure 5 also shows that the pulp and paper industry is widely distributed in Sumatra and Java.

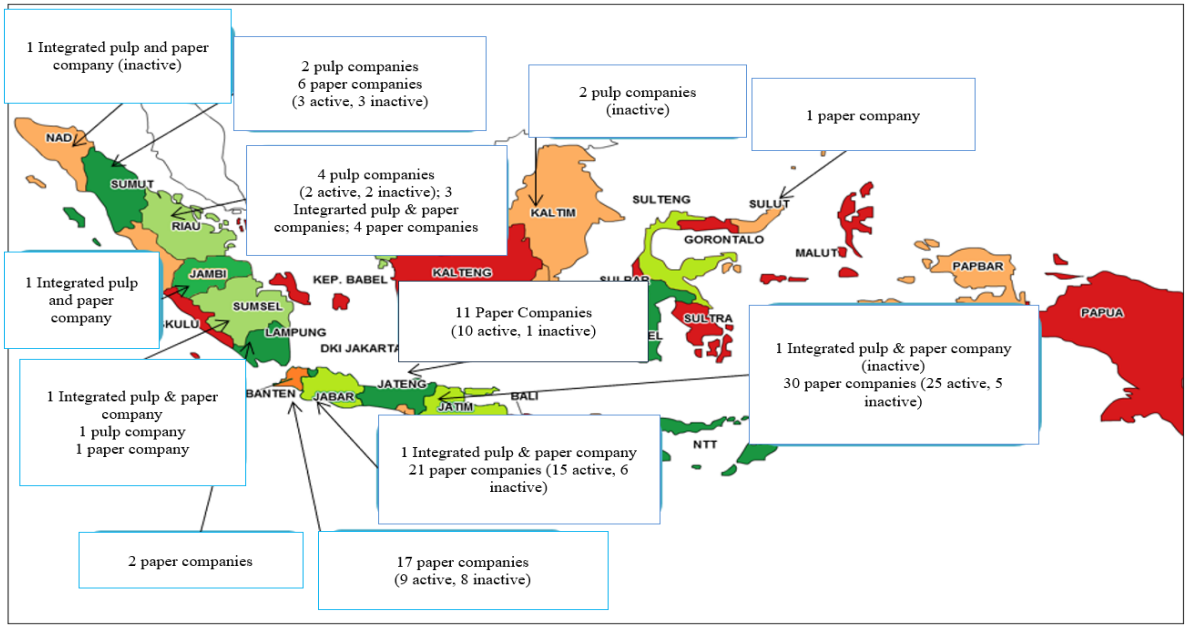


Figure 5: Map of pulp and paper industry distribution in Indonesia.

Sumatra has 19 operational active pulp and paper companies, as evidenced by location, end product type, and installed capacity. Referencing Table 4 provides detailed information regarding these companies' production capacities in Sumatra.

Table 4 shows that the total pulp production capacity in Sumatra is 9,757,000 tons/year, which accounts for 92.6% of Indonesia's total pulp production. In terms of ownership, PMA owns 58.4% and 41.6% of PMDN.

Table 4: Pulp companies by ownership status.

	Company	Status	Product	Production Capacity (Ton/Year)
Sumatera Utara	1 company	PMDN	Pulp	240.000
Riau	2 companies	PMA	Pulp, Paper	2.746.000
		PMDN	Pulp	2.800.000
Sumatera Selatan	1 company	PMA	Pulp	2.500.000
Jambi	2 companies	PMDN	Pulp, Tissue Paper	1.021.000
		PMA	Pulp	450.000
Total Production Capacity (Ton/Year)				**9.757.000**

Sumber: APKI (2022).

4.2 Pulp Industry Value Chain Map

The supply chain in the pulp and paper industry is reliant on a network of partners, spanning from raw material suppliers and manufacturers to consumers. At each stage of the chain, the product's value is enhanced, aiming to maximize customer satisfaction and secure a competitive edge in the market. This industry employs a pull-based model to leverage market advantages, notably by prioritizing quality in response to consumer demands [7]. The pulp, paper, and paper goods industry in Indonesia produces standardized products, with each product type classified according to a grade structure defined by the Pulp and Paper Product Council (Ministry of Industry, 2021) [2]. Furthermore, to ensure the wood supply chain for wood-based industries, including the pulp industry, originates from verifiable sources, the Government has implemented a mandatory timber certification scheme, known as the Timber Legality Verification System (SVLK). This industry emphasizes collaboration, with companies along the chain working together to efficiently and effectively produce and market products..

The pulp and paper industry relies on raw materials sourced from virgin pulp, which is derived from wood harvested from plantation forest concessions (HTI). Virgin pulp raw materials are categorized into two types of fibers: short wood fibers and long wood fibers. The processing of short fiber wood results in leaf bleach kraft pulp (LBKP), known for its superior sheet formation quality. Conversely, long wood fibers are obtained from softwood, which thrives in subtropical and cold climates; hence, this fiber type is typically sourced through imports. The product of long fiber wood processing is called needle-bleached kraft pulp (NBKP), distinguished by its excellent strength characteristics and bonding capabilities.

Another key raw material utilized in this industry is derived from non-wood sources, specifically waste paper. This recycled material is primarily used to manufacture packaging paper and brown paper. The demand for waste paper in Indonesia amounts to approximately 6-7 million tons per year, half of which is sourced domestically. The remainder is imported, a necessity due to Indonesia's low paper consumption and the scattered presence of waste paper across various regions. To date, Indonesia lacks a comprehensive recycled paper waste collection scheme and effective waste sorting practices [2].

The products resulting from pulp processing encompass tissue paper, packaging paper, paperboard, and a variety of other paper types. Beyond meeting paper requirements, the pulp industry also ventures into producing dissolving pulp products, which serve as raw materials for

rayon used in the textile and textile product industries. The distribution of pulp and paper commodities is illustrated in Figure 6.

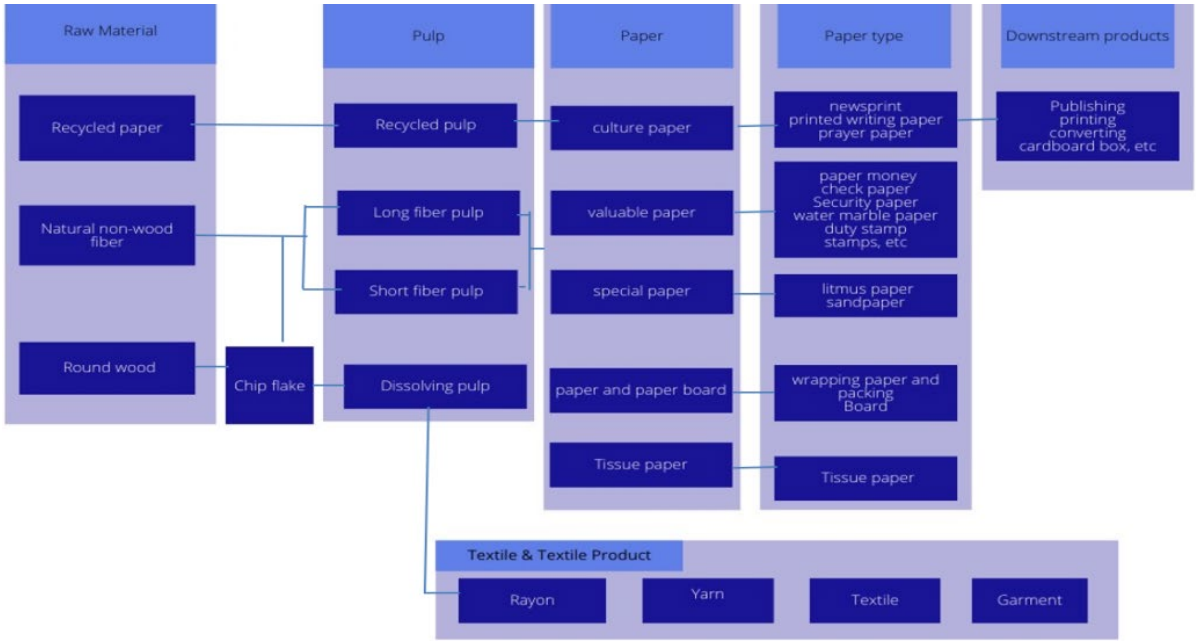


Figure 6: Pulp and paper industry tree. Source: APKI (2022).

As mentioned above, Indonesia is home to 81 active pulp and paper companies that are licensed to operate. This study highlights some of the key participants in the pulp value chain. A value chain is a business model that outlines the series of activities required to deliver a product or service. For companies producing goods, the value chain encompasses the steps from the concept of the product to its final output, including the procurement of raw materials, manufacturing processes, and marketing activities [7]. The value chain starts and ends with the market, designed in agribusiness to enhance competitive advantage by linking producers, actors in production, market participants, and suppliers [18]. The initial step in developing a value chain is to perform supply chain mapping and evaluation. Identifying and mapping the industry's supply chain is crucial for pinpointing opportunities. Through mapping the suppliers and customers of the industry, a clearer understanding of how products are distributed through market channels is gained, enabling the identification of key stakeholders within the value chain [1]. Figure 7 illustrates the pulp value chain flow from upstream to downstream.

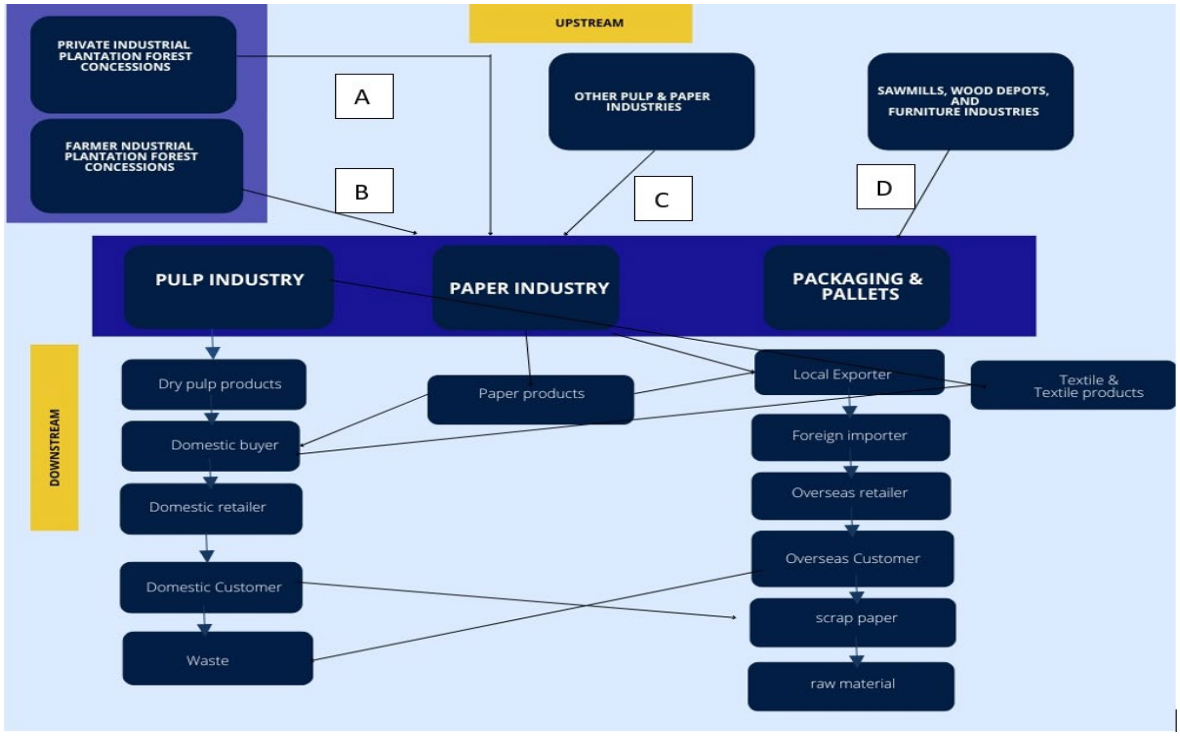


Figure 7: Pulp and paper value chain.

Based on the figure above, the pulp industry supply chain actors can be divided into four categories: raw materials, manufacturers, distributors, and consumers.

4.2.1 Raw Material

The paper industry primarily utilizes raw materials sourced from wood or virgin pulp and wood from industrial forest plantations. The pulp and paper industry obtains 40% of its fiber wood from private companies, with the remaining 60% sourced from HTI concessions (chains A and B). Approximately 90% of the fiber wood input undergoes cutting and processing into both wet and dry pulp. Sales of dry pulp are evenly distributed between domestic and export markets, while wet pulp products are transformed into paper products, with three-quarters of total production being exported. This indicates that three-quarters of total production is exported without any added value. Less than 1% of total pulp production comes from alternative suppliers (chain C) and is blended with pulp produced by the company at the paper mill. About 10% of wood fiber inputs are utilized as pallet material for transporting pulp and paper products, fulfilling around 40% of the total pallet requirement. The remaining 60% of pallets are procured from non-company sawmills, wood depots, and the furniture industry (chain D) [19].

Moreover, the issuance of business licenses for the utilization of timber forest products in industrial plantations has been on the rise annually. By 2019, licenses for forest product utilization had expanded to 11.26 million hectares, up from 10.54 million hectares in 2014 (Ministry of Industry, 2021). The period from 2014 to 2019 saw fluctuations in the realization of plantation establishment in HTI areas, with a general downward trend of 2.37%. However, round wood production in HTI areas has seen an increase, reaching 40.02 million cubic meters in 2019. According to APKI data (2022), the installed capacity for pulp stood at 12.13 million tons in 2021, necessitating 52.18 million cubic meters of wood and 2.43 million hectares of HTI plantations. Wood demand is anticipated to rise to 58.8 million cubic meters by 2024, based on a 5% growth assumption. Table 5 presents the projected demand for pulp raw materials from HTI plantations up through 2024.

Table 5: Projected raw material requirements for the pulp industry from pulpwood plantations.

Descriptions	2021	2022	2023	2024
Installed Pulp Capacity (tons)	12.136.800	12.743.640	13.380.822	14.049.863
Wood Raw Material Needs (m3/year)	52.188.240	56.029.478	58.830.952	58.830.952
HTI land requirements (ha)	2.427.360	2.548.728	2.676.164	2.809.973

Source: APKI (2022).

In addition to being met from HTI sources, imports of long fiber pulp and dissolving pulp were also carried out, with an import volume of 1.36 million tons or valued at 1.07 billion USD. Other fibers are still being researched, so raw paper materials are optimized using recycled pulp and paper (KDU). The availability of domestic KDU needs to be increased.

4.2.2 Manufacturers

APKI (2022) reports that Indonesia is home to 81 active pulp and paper companies holding operating licenses. The majority of these companies are situated in Sumatra and Java. With the current scale of the pulp and paper industry, it is capable of employing approximately 261 thousand direct workers and 1.1 million indirect workers throughout the pulp and paper value chain (Ministry of Industry, 2021). Details regarding the number of pulp and paper companies are provided in Table 3 above. Additionally, information about the pulp and paper industry players in the Sumatra region can be found in Table 6 below.

Table 6: List of Pulp and Paper Players in Sumatra.

No	Province	Name of the company	Type of industry	Status
1	Aceh	PT. Kertas Kraft Aceh (Persero)	Integrated pulp and paper company	inactive
2	Sumatera	PT. Toba Pulp Lestari, Tbk	Pulp	active
3	Utara	PT. The Univenus	Paper	active
4		PT. Bamindo Agro Persada	Paper	active
5		PT. Evergreen International Paper	Paper	active
6	Sumatera	PT. Kelambir Jaya	Paper	active
7	Utara	PT. Lampion	Paper	inactive
8		PT. Citra Belantara	Paper	inactive
9		PT. Pusaka Prima Mandiri	Paper	inactive
10	Riau	PT. Indah Kiat Pulp dan Paper Tbk	Integrated pulp and paper company	active
11		PT. Pindo Deli Pulp and Paper Mills	Paper	active
12		April Group (PT Riau Andalan Kertas)	Paper	active
13		April Group (PT Riau Andalan Pulp and Paper)	Pulp	active
14		April Group (PT Intiguna Primatama)	Pulp	active
15	Batam	PT. Kertas Terpadu Batamindo	Recovered pulp and paper	active

Table 6: Continued.

No	Province	Name of the company	Type of industry	Status
16		PT. Dehong Paper Industri	Recovered Pulp	active
17		PT. Hok Seng Jayaperkasa	Recovered Pulp	active
18		PT. Wondtrend Indonesia	Recovered Pulp	inactive
19		PT. Best Eternity Resources	Recovered Pulp	inactive
20	Jambi	PT. Lontar Papyrus Pulp & Paper Industry	Pulp and tissue paper	active
21	Sumatera	PT. Oki Pulp & Paper Mills	Pulp, tissue paper	active
22	Selatan	PT. Tanjung Enim Lestari Pulp and Paper	Pulp	active
23		PT. Musi Rapi Paper Factory	Paper	active
24	Lampung	PT. Pola Pulpindo Mantap	Paper	active
25		PT. Budi Makmur Perkasa	Paper	active

In production activities, the pulp and paper industry uses investments worth IDR 200 trillion with an installed capacity of 12.13 million tons for pulp and 18.26 million tons for paper.

4.2.3 Distributors

In addition to fulfilling domestic needs, Indonesian pulp and paper-producing companies also distribute their products internationally. This global distribution is reflected in the total value of pulp and paper exports, which has demonstrated an upward trend over the past five years. Specifically, the export value of pulp increased by 62% from 2016 to 2019 (from 1.56 billion USD in 2016 to 2.53 billion USD in 2019). Despite a decrease of 11.2% during the 2020 pandemic, pulp exports rebounded in 2021 with a 19% increase, reaching 2.55 billion USD. It is important to note that these figures do not include the exports of dissolving pulp, which have also seen significant growth over the same period, amounting to 0.78 billion USD in 2021. Similarly, the export value of paper has exhibited a positive trend, peaking at 4.48 billion USD in 2018. After a modest decline in 2020, the value slightly recovered in 2021, increasing by 0.7% to 4.22 billion USD (APKI, 2022).

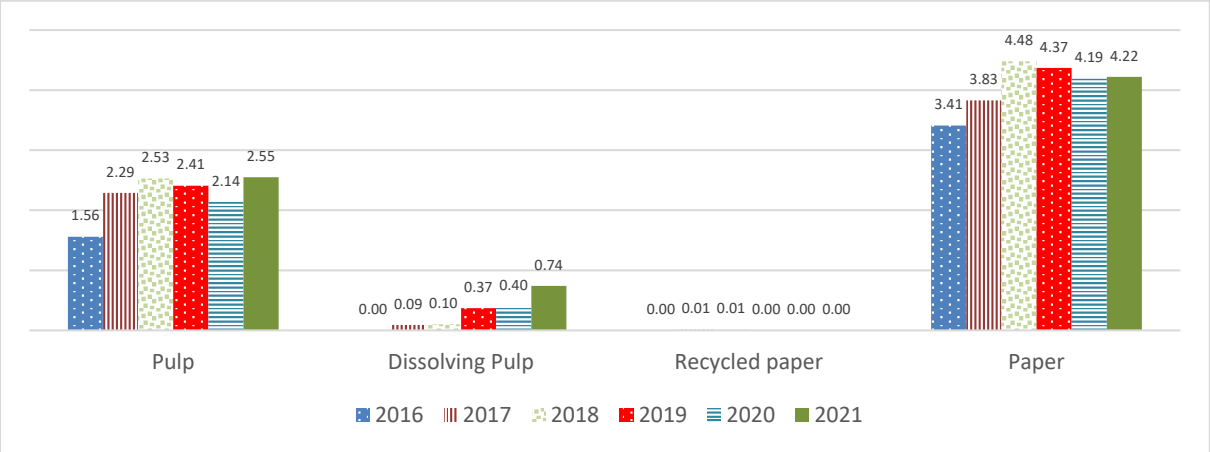


Figure 8: Export value of the Pulp and Paper Industry.

Indonesia exports pulp to countries such as China, Korea, India, Bangladesh, and Vietnam. According to the Ministry of Industry (2022), pulp represents the most significant source of foreign exchange within the paper, paper goods industry, and the printing and reproduction of recorded media sectors. This commodity ranks as the 10th largest industrial product in terms of generating foreign exchange. In 2020, the export value of pulp saw a decrease of 8.86%, dropping

from USD 2.78 billion in 2019 to USD 2.53 billion. Given this data, Indonesia is encouraged to pursue downstream activities to derive greater benefits from the pulp industry value chain.

4.2.4 Consumers

Currently, global demand for paper stands at approximately 394 million tons. This demand is projected to grow at an average rate of 2.1 percent per year, with expectations to reach 490 million tons by 2020. Indonesia's pulp industry has an annual capacity of 11.83 million tons, positioning it eighth globally. Paper consumption per capita in Indonesia is currently around 32.6 kg, which is considerably low compared to other countries such as the United States (219 kg), Germany (246 kg), Canada (238 kg), Japan (208 kg), China (76 kg), and Brazil (45 kg).

Paper products consumed by the public, whether domestically produced or imported, eventually become waste paper. This waste paper can serve as a raw material for second-grade paper products, such as newsprint and packaging paper. At present, only 20% of waste paper comes from domestic sources, with the remainder relying on imports from various countries.

4.3 Strategic issues for the downstream pulp industry in Indonesia

4.3.1 External Environment

An analysis of the external environment of the downstream pulp industry was conducted using PESTLE analysis, as follows:

a. Politics

The election of the President and representatives significantly impacts the industrial sector, especially in terms of policy formulation, the political system, and investment strategies. The government ensures the supply of raw industrial materials, as mandated by Law No. 3 of 2014 concerning the industry. Consequently, the government's policy to ban the export of logs, outlined in Minister of Trade Regulation No. 18 of 2021 regarding Goods Prohibited from Export, further promotes the downstreaming of the pulp industry. Wood that is barred from exportation must be domestically utilized, spurring the creation of innovative derivative products within the wood-based and pulp industries. A guaranteed supply of raw materials from HTI concessions underscores the government's commitment to fostering investment and business certainty.

Conversely, the ease of importing raw and auxiliary materials has led to a reduced demand for upstream and intermediate industrial products domestically. Seven sectors have been identified to receive Specific Natural Gas Price incentives to meet their raw material gas needs. However, the pulp and paper industry has yet to be included in the list of sectors outlined in Presidential Regulation 121 of 2020.

b. Economic

The economic recession leads to a decrease in people's income and alterations in their purchasing behavior, with a preference for necessities over other expenditures. Companies experience diminished profits and demand, reflecting the broader impact of an economic recession on the market.

According to Arfani et al. (2012) [20], the government intervenes in both domestic and international economies through tariff and non-tariff barriers. In terms of tariff barriers, the paper industry has faced accusations of dumping and subsidization from the United States and Australia, rendering its products uncompetitive and impeding market entry. These accusations have led to a decline in exports and, consequently, a reduced demand for pulp as a raw material.

The allegations of dumping Indonesian pulp and paper stem from the United States' reference to a higher pulp price in Malaysia compared to Indonesia, leading to accusations against Indonesian producers of subsidizing their export products. Meanwhile, Australia views Indonesia as practicing a particular market situation (PMS) due to the regulation banning log exports. This ban provides Indonesia with an advantage of an abundant supply, thereby affecting prices

c. Social

According to Heikal (2021) [21], socio-cultural shifts in Indonesia have been significantly influenced by the emergence of policies during the global pandemic. The government advocated for changes in social behavior, including social distancing and limitations on community mobility. The tradition of returning to one's hometown has also evolved in response to government recommendations and policies aimed at curbing the spread of the COVID-19 virus. Moreover, these policies have had implications for Indonesia's educational sector by promoting online learning through digital platforms, thus diminishing in-person learning and direct social interactions. Similarly, the corporate world has adopted work-from-home (WFH) policies. The transition to Work from Home and School from Home has led to a decreased demand for paper, particularly in the printing and writing sectors, adversely affecting the revenue of the pulp industry, which supplies raw materials to the printing paper sector. Conversely, the advent of the new normal has spurred an increase in e-commerce, necessitating more packaging paper, paperboard, and tissue paper for health/beauty products, alongside a heightened demand for comfortable clothing made from viscose rayon derived from dissolving pulp. This scenario signifies a pivot towards derivative industries within the pulp industry value chain, with fresh investments in packaging paper and paperboard, tissue paper, and viscose rayon dissolving pulp.

Umar (2017) [22] forecasts that from 2020 to 2030, Indonesia will experience a demographic bonus, with approximately two-thirds of its population being of working age. Indonesia, a country reliant on its natural resources, must be poised to harness this demographic advantage to foster a youthful, highly productive workforce. The demographic bonus also presents an opportunity for the pulp industry to further diversify its product offerings in line with the evolving demands of consumers.

d. Technology

According to Amalia et al. (2018) [23], the Industrial Revolution represents a phase of advancement aimed at propelling and evolving the industry towards greater efficiency with the aid of digital technology. The advent of the Industrial Revolution has contributed to a decrease in paper demand within the printing industry, moving towards a paperless approach. This decline in demand for the printing industry undeniably affects the need for printing and writing paper, subsequently influencing the demand for pulp further up the value chain.

e. Law

The enactment of Law No. 11 of 2020 on Job Creation, aimed at empowering the Government of the Republic of Indonesia and fostering a prosperous society, necessitates modifications across various regulatory domains. This includes promoting enhancements in the investment ecosystem and the acceleration of national strategic projects. Furthermore, this legislation advocates for increased investment in the pulp and its derivative industries, offering the potential for Tax Holiday fiscal incentives for the pulp industry and integrated pulp industries. These incentives are contingent on the assurance of raw material supplies from HTI (Industrial Plantation Forest) or imported sources.

f. Environment

Certain countries frequently utilize environmental concerns as a foundation for implementing extensive and complex regulations regarding the importation of products. For instance, this includes the imposition of certification requirements for wood products in regions such as the European Union, the United States (Lacey Act), Japan (Green Konyuho), among others. To

guarantee that the wood supply chain for wood-based industries, including the pulp industry, originates from verifiable sources, the government has instituted a compulsory timber certification program, known as the Timber Legality Verification System (SVLK).

Susilawati (2020) [19] indicates that her research offers empirical evidence showing that participants in the pulp and paper value chain within the case study have attained compliance with regulatory standards (PHPL and SVLK). However, this compliance tends to be more theoretical than practical for some components. The weaknesses in the design and execution of these regulatory systems, which diminish the effectiveness of these standards and processes and allow for ongoing non-compliance, align with theories of regulation. On the other hand, regulatory theory and experiences from other contexts suggest that policy and practice modifications are necessary to overcome these barriers and encourage the production of cleaner pulp and paper raw materials from plantation forests.

The PHPL and SVLK regulations underscore the Indonesian Government's dedication to fostering sustainable forest management and verifying legality throughout the pulp and paper value chain [24]. Indonesia has ratified the FLEGT VPA agreement (Forest Law Enforcement, Governance, and Trade-Voluntary Partnership Agreement) with the European Union, recognizing SVLK as an approved certification for market entry into the EU. Nonetheless, buyers may still demand additional voluntary certifications, such as those from the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC). This requirement undoubtedly complicates market access to the European Union. It could escalate costs for Indonesian forestry product exporters who need to meet these buyer conditions.

Based on the PESTLE analysis above, it attempted to identify opportunities and threats from the external environment for the pulp industry sector, namely:

A. Opportunities
   a. Regulations that support business security and the industrial investment ecosystem (Job Creation Law, Tax holiday, Ban on log exports, etc).
   b. Large population and increasing consumption of pulp and paper industry products. Domestic and foreign markets have the potential to increase their demand.
   c. Demand for paper and cardboard products for packaging, tissue paper, and viscose rayon, which are derivatives of the pulp industry, is increasing.
   d. Many potential labor candidates are available from the demographic bonus of the productive age.
   e. Foreign investors are still relatively interested in investing in Indonesia's pulp and paper industry because Indonesia has comparative advantages that promise relatively high profits.
B. Threats
   a. Increasing tariff barriers from competing countries, such as accusations of dumping from countries like the United States and Australia.
   b. Changes in consumer behavior towards the digital industry reduce demand for printed writing paper.
   c. The pulp and derivatives industry faces competition from imported paper in the domestic market.
   d. The high industrial gas price results in high production costs for pulp and paper companies in Indonesia.
   e. Ecolabeling demands from export destination countries are a non-tariff barrier affecting buyers. Indonesia already has a Timber Legality Verification System (SVLK) certification scheme. However, it currently needs to be more widely accepted in export destination countries.

4.3.2 Internal Environment Analysis

The internal environment assessment focuses on identifying the strengths and weaknesses within the Indonesian pulp industry. This analysis scrutinizes the capabilities and limitations of a business entity. Strengths serve as foundational assets and core competencies for the development and execution of business strategies. Conversely, weaknesses are identified as areas needing improvement to enhance competitiveness relative to rivals [20].

In this context, the internal environment is evaluated using the VRIO framework, which then aids in pinpointing strategic issues that represent the internal strengths and weaknesses of the pulp industry sector. Originally introduced by Barney (1991) [11] in his seminal work 'Firm Resources and Sustained Competitive Advantage,' VRIO outlines four attributes that must characterize a firm's resources to constitute a sustainable competitive advantage. This analytical method reviews various elements, including input resources (such as raw materials, auxiliary materials, and human resources), process and production technology, marketing strategies, corporate structure (including management), research and development efforts, and operations and production processes.

Barney (1991) [11] posited that for resources to confer a sustainable competitive advantage, they must be valuable, rare, inimitable, and organizationally supported. Table 7 presents the findings of the internal environmental analysis of the pulp sector, incorporating insights from respondents affiliated with the Upstream Cellulose and Rubber Industry Function Coordinator from the Directorate of Forest Products and Plantations, Ministry of Industry.

Table 7: Internal environment analysis with VRIO approach.

Resources	V	R	I	O	Implications
Raw Material Potential	Y	Y	Y	Y	*Sustained competitive advantage*
Potential of auxiliary materials	N	N	N	N	*Competitive disadvantage*
Use of production process technology	Y	Y	Y	Y	*Sustained competitive advantage*
Product marketing	Y	Y	Y	Y	*Sustained competitive advantage*
Pulp and paper development research	Y	Y	Y	Y	*Sustained competitive advantage*
Production process efficiency	Y	Y	Y	Y	*Sustained competitive advantage*
Quality	Y	Y	Y	Y	*Sustained competitive advantage*
Product Price	Y	Y	Y	Y	*Sustained competitive advantage*
HR of pulp companies in general	Y	Y	Y	N	*Temporary competitive advantage*
Market Control	Y	Y	Y	Y	*Sustained competitive advantage*

From the table, four Sustained Competitive Advantages emerge as the greatest strengths: market control, raw material potential, quality, and competitive product pricing. This is attributed to Indonesia's favorable natural resources for the pulp industry. Meanwhile, competitive parity is observed in the efficiency of the production process and the competence of human resources. The production process occasionally struggles with lengthy and costly distribution. The temporary competitive advantage pertains to human resource competencies, which are linked to Indonesia's large population. Consequently, there are instances when human resource issues become obstacles, affecting labor mobility and the propensity for job changes.

Based on the results of the VRIO analysis above, several strengths and weaknesses of the pulp industry can be grouped:

A. Strengths

1. Market share of Indonesia's pulp and paper industry

The large installed capacity of Indonesia's pulp and paper industry, namely Pulp: 12.13 million tons and 18.26 million tons of paper, has led Indonesia to become the eighth pulp producer and sixth paper producer globally.

2. Guaranteed supply of raw materials

The corporate structure of pulp producers, an integrated corporation from raw materials upstream to downstream HTI, guarantees the availability of raw wood material.

3. Production process efficiency

Investment in a large-scale, high-tech, integrated pulp industry can increase efficiency. In addition, it can also maintain quality stability from raw materials to downstream derivative products.

4. Good product quality

The pulp and derivative products produced are of good quality compared to similar products in other countries.

5. Low product price

The efficiency of the production process with economies of scale encourages the formation of low product prices so that they are more competitive with good quality.

6. Competent human resources in the pulp industry

The pulp sector workforce generally has a background in related education. The industry has collaborated with vocational schools and universities through vocational programs and industrial internships to produce competent human resources ready to work in the pulp and derivative industries.

B. Weaknesses

1. Product distribution costs are relatively high

The location and length of the value chain of the pulp and derivatives industry are far from the location of markets, both local and export, which have high demand, such as in Java, because the pulp industry is integrated with HTI plantations located in Sumatra. In addition, the distribution of quality products must always be maintained.

2. Long distribution channels

On average, the pulp industry and pulp integrated with downstream products are corporations that have distribution channels depending on central policies. Usually, corporations have a long distribution chain up to the retailer or end consumer. Sole distributors will sell products through authorized distributors per a specific region before reaching the end consumer.

3. High national and international promotion costs

Companies with large installed capacity and broad product diversification must be able to sell their products to the domestic market and export markets. This causes high promotional costs that the company must carry out to increase sales figures that can cover the company's fixed costs of materials and generate good profits.

4. Fluctuating raw material prices from suppliers

Although the source of raw materials comes from integrated suppliers, the price of raw materials still refers to international timber prices. So, if there is limited raw material in the market, it will

encourage an increase in the price of raw materials. An increase in raw material prices will affect the final price of pulp and derivative products and the company's profit margin.

5. Some HTI-pulp areas are not yet clean and clear

In some HTI plantation areas, there are still problems/conflicts with the community. This could prevent certification from being obtained from the social sustainability perspective and hinder the guarantee of raw material supply.

6. Most auxiliary materials depend on imports

Most of the raw materials used in Indonesia's pulp industry are imported, with each raw material subject to import duties of 5-10% (Table 8).

Table 8: List of Pulp and Paper Industry Auxiliary Raw Materials that are still subject to import duties.

No	Imported Items	HS Code	TRBM
1	Tapioca Starch & Wheat Starch	11081400	10%
2	Quicklime (Kapur Tohor / Calcium Oxide)	25221000	5%
3	Limestone	25210000	5%
4	Sodium Sulfate	28331100	5%
5	Hydrogen Peroxide	28470010	5%
6	Phosphoric Acid	28092039	5%

Regarding the condition of imports of auxiliary materials during the pandemic period, some notes related to auxiliary materials are as follows:

- There was a decrease in shipment productivity due to many ships being blocked at Chinese ports due to the spread of the coronavirus. This resulted in fewer ships sailing, which resulted in shortages and price increases for Global Cargo.
- Shipments from Europe generally take 35- 45 days. However, this may be longer due to the uncertainty of European procurement and processing activities with the COVID-19 issue in recent days. This will lead to an increase in raw material supplies from Asia and Australia as they are prioritized.
- This relaxation of import duty exemptions can support the productivity and efficiency of Indonesia's pulp and paper industry in the face of the COVID-19 crisis, amidst market difficulties and global distribution of auxiliary raw materials.

4.3.3 Strategy to support strengthening the competitiveness of Indonesia's pulp industry

Based on the scanning of the internal and external environment of the Indonesian pulp industry, alternative strategies were developed by considering the strengths, weaknesses, opportunities, and threats previously identified. Figure 9 shows the process of matching internal and external factors using the SWOT approach.

Based on the results of strategy formulation using SWOT analysis, a list of strategies to support the downstream pulp industry is obtained by mapping alternative strategies directly related to upstream, process, downstream, process-downstream, and upstream to downstream. If the above strategies are mapped in the value chain flow, they can be seen in Table 9.

Figure 9: SWOT analysis of the pulp industry.

Internal Factors / External Factors	***Strength***	***Weakneses***
	S-1. Market share of Indonesia's pulp and paper industry S-2. Guaranteed supply of raw materials S-3. Production process efficiency S-4. Good product quality S-5. Competitive product price S-6. Competent pulp industry human resources	W-1. Product distribution costs are relatively high W-2. Long distribution channels W-3. High national and international promotion costs. W-4. Raw material prices from suppliers fluctuate W-5. Some HTI-pulp areas still need to be cleaned and clear. W-6 Most of the auxiliary materials depend on imports
Opportunities	**S – O**	**W – O**
O-1. Regulations that support business assurance and industrial investment ecosystem. O-2. Large population and growing consumption of pulp and paper industry products O-3. There is an increasing demand for paper and cardboard products for packaging, tissue paper, and viscose rayon, which are derivatives of the pulp industry. O-4. Availability of many potential labor candidates from the demographic bonus of productive age. O-5. Foreign investors' high interest in investing in the pulp and paper industry in Indonesia.	1. Supply & demand mapping 2. Optimization of economies of scale investment with product differentiation 3. Optimization of government support to ensure the vast potential of productive and competent human resources 4. Provision of fiscal and non-fiscal incentives for new investment in the pulp and paper industry	1. Export market fulfillment 2. Import raw materials for price stability 3. Opening direct distribution channels online 4. Harmonize regulations at the central and regional levels to guarantee clean and clear HTI raw materials.
Threats	**S – T**	**W – T**
T-1. Increased tariff barriers from export destinations T-2. Changes in consumer behavior towards the digital industry. T-3. The pulp and paper industry also faces competition from imported paper in the domestic market T-4. Relatively high price of industrial gas T-5. Ecolabeling demands from environmental organizations influence buyers and low SVLK acceptance.	1. Optimization of product quality to increase competitiveness in export destination countries. 2. Optimizing the diversification of pulp industry derivative products by changes in consumer behavior. 3. Efficiency of the production process for competitive product prices in the country. 4. Guaranteed availability of certified raw materials to promote SVLK acceptance in international markets.	1. Create products for online sales 2. Specific Natural Gas Price (HGBT) incentive facility for the pulp and paper industry sector 3. Enhanced triple helix collaboration for local raw material substitution innovation

Table 9: Map of alternative upstream-downstream strategies.

Upsteram	Process	Downstream
• Harmonize regulations at the central and regional levels to guarantee clean and clear HTI raw materials. • Importing raw materials for price stability • Guarantee the availability of certified raw materials to promote SVLK acceptance in the international market.	• Production process efficiency for domestically competitive product prices • Specific Natural Gas Price (HGBT) incentive facility for the pulp and paper industry sector • Enhanced triple helix collaboration for local raw material substitution innovation	• Optimization of economic scale investment with product differentiation • Export market fulfillment • Opening direct online distribution channels • Optimizing the diversification of pulp industry derivative products by changes in consumer behavior • Create products for online sales
	• Providing fiscal and non-fiscal incentives for new investment in the pulp and paper industry • Optimizing product quality to increase competitiveness in export destination countries.	
• Mapping supply and demand • Optimizing government support to ensure the vast potential of productive and competent human resources.		

The strategies above speak more about the importance of regulatory policies, supply assurance, process efficiency, product differentiation, and diversification according to market demand. The downstream strategy for the pulp industry must be distinct from the role of collaboration along the value chain, where companies work together to increase the value of pulp products and their derivatives. With the strategies above, designed from upstream to downstream, Indonesia can strengthen its comparative advantage and maintain a sustainable competitive advantage.

5. RESULTS AND DISCUSSION

- The pulp industry significantly contributes to Indonesia's economy, as demonstrated by various economic, social, and other metrics. Currently, the industry's primary concentration is in the Sumatra region, which is responsible for 92.6% of the national total pulp production. In terms of ownership, the Sumatran pulp industry comprises 41.6% foreign direct investment (FDI) and 41.6% domestic investment (PMDN).
- The supply chain in the pulp (and paper) industry relies on a network of partners, including raw material suppliers, producers, distributors, and consumers, where the value of the product escalates at each chain link. This enhancement in value aims to optimize customer satisfaction and secure a competitive edge in the market. To achieve this market advantage, the industry adopts a pull-based model. The supply chain actors within the pulp industry are categorized into four groups: raw materials, manufacturers, distributors, and consumers.
- Addressing downstream strategic issues involves analyzing both the external and internal environments. External strategic issues are predominantly characterized by legal and policy matters, economic recessions, tariff and non-tariff barriers, lifestyle and workplace changes, technological advancements and digitalization, and environmental consciousness demanding certification schemes for sustainability. Internally, the pulp sector is recognized for its

sustained competitive advantages, including market control, raw material potential, product quality, and competitive pricing. However, the sector faces competitive disadvantages due to the reliance on imported auxiliary materials, indicating an area for improvement.

- Implementation of alternative downstream strategies across the pulp industry value chain aims to enhance the industry's value addition. These strategies promote enhancements in the upstream, process, and downstream sectors, including regulatory policy adjustments, supply assurance, process efficiency, product differentiation, and market-driven diversification.

5.1 Managerial Implications

Based on the results of the analysis conducted by the researcher, the following are some notes on managerial implications needed to support the downstream strategy of the pulp industry, including:

- The government is urged to align policies with the requirements of the pulp industry, spanning from upstream to downstream sectors. This entails enacting policies that ensure the availability of clean and clear HTI (Industrial Plantation Forest) raw materials, promoting the acceptance of the SVLK (Timber Legality Verification System), and advocating for the inclusion of the pulp and paper sector in priority industries eligible for business incentives. Additionally, the government should facilitate cooperation among multiple stakeholders to bolster research and development in the pulp and its derivative industries.
- The pulp industry should be underpinned by precise data regarding supply and demand. It must engage in collaborations with various parties to foster innovation, enhance quality, and diversify products, ensuring alignment with market demands.

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