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ANALYZING THE FINANCIAL FEASIBILITY OF PT. CROWN TEKNOLOGI INDONESIA'S MEDICAL GLOVE PRODUCTION EXPANSION

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ABSTRACT

This feasibility study examines the expansion of PT. Crown Teknologi Indonesia (CTI) into the production of medical gloves, a market segment showing significant growth due to increased global awareness of infection control and the rising demand for healthcare products. The study evaluates the financial viability, market potential, and associated risks of establishing a new production facility in Padang, Indonesia, scheduled to begin operations in 2028. The market analysis reveals strong demand for medical gloves in the Asia-Pacific region, projected to grow at a compound annual growth rate (CAGR) of 11.1% from 2022 to 2029, with Indonesia's market expected to expand from USD 40.951 million in 2022 to USD 70.100 million by 2029. CTI's new facility will produce high-quality nitrile gloves, crucial for maintaining hygiene standards in healthcare settings. Financial projections indicate the project's attractiveness, with a net present value (NPV) of IDR 461.56 billion, an internal rate of return (IRR) of 25.30%, profitability index of 25.30%, a payback period of 7.15 years, and discounted payback period of 8.83 years, all of which affirm the project's profitability and alignment with CTI's strategic goals. The study concludes that this expansion is not only financially feasible but also strategically beneficial, positioning CTI to capitalize on growing market opportunities while contributing to the enhancement of Indonesia's healthcare infrastructure.

Keywords: Feasibility, expansion, gloves, analysis, medical market, risk.

ABSTRAK

Studi kelayakan ini menganalisis rencana ekspansi PT. Crown Teknologi Indonesia (CTI) ke dalam produksi sarung tangan medis, segmen pasar yang menunjukkan pertumbuhan signifikan akibat meningkatnya kesadaran global akan pengendalian infeksi dan tingginya permintaan produk kesehatan. Penelitian ini mengevaluasi kelayakan finansial, potensi pasar, dan risiko terkait dalam pendirian fasilitas produksi baru di Padang, Indonesia, yang dijadwalkan mulai beroperasi pada tahun 2028. Analisis pasar mengungkapkan permintaan yang kuat untuk sarung tangan medis di wilayah Asia-Pasifik, yang diproyeksikan tumbuh dengan tingkat pertumbuhan tahunan gabungan (CAGR) sebesar 11,1% dari tahun 2022 hingga 2029, dengan pasar Indonesia diperkirakan akan berkembang dari USD 40,951 juta pada tahun 2022 menjadi USD 70,100 juta pada tahun 2029. Fasilitas baru CTI akan memproduksi sarung tangan nitril berkualitas tinggi, yang penting untuk menjaga standar kebersihan di lingkungan kesehatan. Proyeksi finansial menunjukkan daya tarik proyek ini, dengan nilai sekarang bersih (NPV) sebesar IDR 461,56 miliar, tingkat pengembalian internal (IRR) sebesar 25,30%, indeks profitabilitas sebesar 25,30%, periode pengembalian investasi selama 7,15 tahun, dan periode pengembalian diskonto selama 8,83 tahun, yang semuanya menegaskan profitabilitas proyek dan kesesuaiannya dengan tujuan strategis CTI. Penelitian ini menyimpulkan bahwa ekspansi ini tidak hanya layak secara finansial tetapi juga bermanfaat secara strategis, menempatkan CTI untuk memanfaatkan peluang pasar yang berkembang sambil berkontribusi pada peningkatan infrastruktur kesehatan di Indonesia.

Kata Kunci: Kelayakan, ekspansi, sarung tangan, analisis, pasar medis, risiko

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INTRODUCTION

1.1 Background Research

The world's population is more than three times larger than it was in the mid-twentieth century. According to the United Nations, this population is expected to increase by nearly 2 billion persons in the next 30 years, from the current 8 billion to 9.7 billion in 2050 and could peak at nearly 10.4 billion in the mid-2080s. It's also impacted on the medical devices market that shows significant growth. In 2022, Medical Devices Market size was valued at USD 455.50 Billion and is poised to grow from USD 481.92 Billion in 2023 to USD 756.59 Billion by 2031, growing at a CAGR of 5.8% in the forecast period (2024-2031). This significant growth is driven by several factors, including chronic diseases caused by changing lifestyles, a preference towards home healthcare, and a rise in the geriatric population. The data shows from the United Nations, the number of aging population is projected rising from 761 millions in 2021 to 1.6 billion in 2050. This number grew even faster and became a global trend.

It's been 5 years since the COVID-19 pandemic happened, this pandemic has dramatically increased global awareness about infection prevention, not just for COVID-19 but for all communicable diseases. Healthcare professionals and the general public alike have become more conscious of the importance of proper hygiene practices. This increased awareness has led to more rigorous implementation of existing infection control measures and the development of new strategies to prevent disease transmission in healthcare settings. Healthcare facilities worldwide also have implemented stricter hygiene protocols in response to the pandemic. These protocols are designed to prevent the spread of infections, protect healthcare workers and patients, and improve overall safety standards.

According to the Data Bridge Market Research analyses, the Asia-Pacific medical clothing market which was USD 2694.58 million in 2021, would rocket up to USD 4584.98 million by 2029, and is expected to undergo a CAGR of 6.87% during the forecast period 2022 to 2029. These medical clothing here refers to the clothing that is worn by healthcare professionals during surgery to protect both the patient and the healthcare workers from the spread of infection. Surgical wear can include gowns, masks, caps, and gloves. The market is mainly driven by the growing demand for protection against hazards. Also, the technological advancement in the medical field is considerable for the rising number of surgeries which also increase the use of surgical wear.

One of the product that became a part of surgical wear is a gloves. Gloves are a crucial component of personal protective equipment (PPE) used in medical settings, especially during surgical procedures. The purpose of this equipment are to reduce the risk of contamination and infection, helping to maintain a clean surgical field and protect the healthcare provider. Surgical gloves are typically made of materials like latex, nitrile, or neoprene, and are designed to be highly durable and provide excellent tactile sensitivity.

According to Data Bridge Market Research, Asia-Pacific gloves market is expected to gain market growth in the forecast period of 2022 to 2029. Data Bridge Market Research analyzes that the market is growing with a CAGR of 11.1% in the forecast period of 2022 to 2029 and is expected to reach USD 9,817.60 million by 2029 from USD 4,207.42 million in 2021.

In Indonesia, the medical glove market presents a particularly compelling opportunity for investment and expansion. The market, valued at USD 40.951 million in 2022, is expected to grow to USD 70.100 million by 2029, at a CAGR of 7.98%. If we look at the Indonesia's

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overall medical devices market, it valued approximately $3.6 billion in 2021, relies heavily on imports, with around 70% of medical products, especially high-tech equipment like diagnostic tools, being sourced from abroad. This reliance presents a substantial opportunity for foreign and domestic investors to fill the gap, particularly as the Indonesian government seeks to expand and upgrade the country's healthcare infrastructure.

A critical aspect of Indonesia's healthcare strategy is the government's TKDN (Tingkat Komponen Dalam Negeri) policy, which mandates a minimum percentage of local content in medical devices. This policy, enforced by the Ministry of Industry (Kementerian Perindustrian), identifies 79 priority medical products that have achieved a TKDN value of more than 40%. Among these priority products are surgical wear and apparel, including surgical gloves, which are now mandated to be sourced locally and are prohibited from being imported. This regulation not only promotes local manufacturing but also aims to enhance self-sufficiency and reduce dependency on foreign products. Businesses that comply with the TKDN policy benefit from government incentives and a competitive advantage in securing government contracts, crucial for accessing the public healthcare market.

Despite challenges such as regulatory compliance, infrastructure limitations, and the need for high-quality raw materials, the Indonesian medical device market is poised for robust growth. Projections from BMI Country Risk & Industry Research suggest that the market will grow at a CAGR of 10.8% from 2021 to 2026, potentially reaching a market value of USD 1.9 billion. The medical gloves sector, in particular, offers significant growth potential due to the increasing demand driven by heightened hygiene standards and the growing number of surgical procedures.

Amidst these promising trends, PT. Crown Teknologi Indonesia (CTI), established in 2022 in Padang, West Sumatra, has emerged as a key player in the Indonesian medical device industry. Specializing in the manufacture of medical devices and in vitro diagnostic tools, CTI began production in 2023, focusing on developing in vitro diagnostic kits. These include Nucleic Acid Amplification Tests (NAAT) and Rapid Diagnostic Tests (RDT), marketed under the brand name "CRown_Lab." By collaborating with renowned researchers and prestigious universities, CTI ensures high standards and innovative solutions, solidifying its position in the market.

Recognizing the vast potential in the medical device sector, CTI plans to expand by opening a new branch in Padang along ByPass Street, strategically located for logistical advantages. The new branch is scheduled to commence operations in early 2028, reflecting CTI's growth trajectory and market confidence. CTI has earmarked an initial investment of IDR 40 billion for this expansion. This investment will cover renting the new facility, purchasing state-of-the-art equipment, and other essential business activities. Funding for this project will come from various investors, underscoring the confidence and interest CTI has garnered. By increasing their footprint, CTI aims to significantly contribute to advancing medical diagnostics and healthcare solutions in Indonesia and beyond, positioning the company at the forefront of medical technology innovation.

In conclusion, the global trends in population growth and increased healthcare needs, combined with specific market dynamics in Indonesia, present a compelling case for investing in the medical gloves sector. The Indonesian government's supportive policies and the growing demand for high-quality medical devices, including gloves, create a fertile ground for new business ventures and expansions in this field. As the country continues to

develop its healthcare infrastructure and reduce its reliance on imports, businesses focusing on local production and compliance with TKDN policies are well-positioned to capitalize on the growing market opportunities. CTI's strategic expansion and commitment to innovation exemplify the opportunities and growth potential within Indonesia's healthcare sector, particularly in the medical gloves and diagnostic tools markets.

1.2 Problem Identification

PT. Crown Teknologi Indonesia (CTI) is embarking on a market expansion strategy, leveraging its established collaborations with various institutions to open new opportunities and expand into broader markets. The company has decided to establish a new branch in Padang, where it is already located, to deepen its penetration into the Indonesian market. This strategic move aims to capitalize on CTI's existing infrastructure and market presence while enhancing its capacity to meet the growing demand for medical devices in Indonesia.

However, this expansion plan involves substantial capital investment. To achieve its goals, CTI needs to invest in advanced production machinery, high-quality raw materials, and other critical resources. These investments are necessary to maintain the company's commitment to producing top-tier medical devices and adhering to stringent hygiene and quality standards, which are vital in the healthcare industry. The significant financial outlay required for these initiatives necessitates a comprehensive feasibility analysis.

So, by conducting a financial feasibility study including market analysis and financial risk analysis is essential for CTI. This company can ensure that its expansion strategy is grounded in solid data and well-informed projections. This approach will help minimize risks and maximize the potential for success, positioning CTI to thrive in the competitive Indonesian medical device market.

LITERATURE REVIEW

2.1 Feasibility Study

Feasibility study was defined in chapter 1 of *Business Feasibility Study* as follows: "*The definition of a business feasibility study is research and assessment of whether or not a project can be carried out successfully (profitably).*" (Ichsan, Nasution and Sinaga, 2019:3)

2.2 Market Analysis

2.2.1 Marketing Mix Analysis

Marketing mix analysis is a comprehensive approach to evaluating the fundamental components of a company's marketing strategy (Investopedia, 2024). This analytical framework, traditionally known as the "4 Ps," provides a structured method for assessing and optimizing key marketing elements. This framework consist of:

1. Product, this refers to the goods or services offered by the producer to the customers. The product should aim to satisfy customer needs or solve their problems.
2. Price, this relates to the pricing strategy that used by the producer.
3. Place, it's about how and where customers can access or purchase the product or service. This could involve physical retail locations, online platforms, wholesalers, or direct sales, depending on the nature of the business and its target market.

4. Promotion, this covers the communication strategies used to promote the product or service.

2.2.2 TAM SAM SOM Analysis

According to seerinteractive.com (John, 2024), TAM, SAM, and SOM are key metrics for estimating market potential. TAM (Total Available Market) represents the entire market demand for a product or service, assuming no limitations. SAM (Serviceable Addressable Market) is the portion of TAM a business can realistically target, considering constraints like geography and pricing. SOM (Serviceable Obtainable Market) is the specific part of SAM a business can realistically capture, based on factors such as competition and marketing capabilities. These metrics help businesses assess market size, identify target segments, and set growth targets.

2.3 Business Model Canvas

According to the Interaction Design Foundation, a business model canvas is a tool used by designers to outline a business or product's key components, including actors, activities, resources, value propositions for target customers, customer relationships, channels, and financial aspects. A business model explains the reasoning behind how an organization generates, delivers, and secures value (Osterwalder,2024).

2.4 External Analysis

2.4.1 The porter's Five Forces Analysis

Porter's Five Forces model, a cornerstone of strategic analysis, provides a framework for understanding the competitive landscape of an industry and its potential for profitability. The model examines five key forces: competition among existing firms, the threat of new entrants, the bargaining power of suppliers, the bargaining power of buyers, and the threat of substitute products (Investopedia, 2023). This framework moves beyond traditional views of competition, recognizing that relationships with suppliers and buyers significantly impact industry dynamics. By analyzing these forces, businesses can gain insights into the intensity of competition, the potential for profitability, and the strategies needed to navigate the unique challenges of their industry. While the model has been critiqued for its static nature and limitations in addressing rapid technological change, its core principles remain relevant in today's dynamic business environment (Investopedia, 2023).

2.4.2 PESTEL Analysis

According to the Corporate Finance Institut, PESTEL analysis is a valuable tool for businesses to understand the external environment in which they operate. It considers six key factors: political, economic, social, technological, environmental, and legal. By analyzing these factors, companies can identify potential risks and opportunities, inform their financial models, and make informed decisions regarding growth strategies, investment, and operational adjustments. For example, changes in interest rates, a key economic factor, can influence financial models and the valuations of companies. Similarly, technological advancements like automation can impact labor costs and free cash flow estimations in financial models (Peterdy, n.d.).

2.5 Internal Analysis

2.5.1 SWOT Analysis

A SWOT analysis aims to identify internal and external factors to give a snapshot of the business environment. It focuses on assessing internal strengths and weaknesses, as well as

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external opportunities and threats. While the analysis provides a comprehensive list of these factors, it does not directly suggest strategic actions.

2.5.2 TOWS Analysis

A TOWS analysis is designed to develop strategies by linking internal and external factors, resulting in actionable plans. It emphasizes evaluating external opportunities and threats alongside internal strengths and weaknesses. By integrating these elements, the analysis generates practical strategies that guide decision-making and strategic planning.

2.6 Financial Statement

2.6.1 Balance Sheet

According to the Principle of Managerial Finance (Gitman & Zutter, 2012), a balance sheet is a concise snapshot of a company's financial status at a specific moment. It details the company's assets, which are its owned resources, and balances them against its liabilities, which are its debts, and equity, which represents the owners' contributions.

2.6.2 Income Statement

According to the Principle of Managerial Finance (Gitman & Zutter, 2012), an income statement offers a financial overview of a company's performance over a defined period. It summarizes the results of the firm's operations, typically for a year ending on a specific date, usually December 31. This statement highlights the company's revenues, expenses, and profits during the specified timeframe.

2.6.3 Statement of Cash Flow

According to the Principle of Managerial Finance (Gitman & Zutter, 2012), The statement of cash flows summarizes a company's cash movements over a specific period. It details cash flows from operating, investing, and financing activities, and aligns these with changes in the company's cash and marketable securities during that time. This statement provides a comprehensive view of how cash is generated and used within the firm.

2.7 Capital Budgeting

Capital budgeting is a critical process for businesses to analyze and select long-term investments that align with their goal of maximizing shareholder wealth. It involves evaluating potential major investment projects or expenditures, such as opening new branches, purchasing equipment, or expanding operations. Capital budgeting techniques are employed to assess the financial feasibility and potential profitability of these investments, considering factors such as expected cash flows, cost of capital, and strategic objectives. The ultimate aim is to enhance the firm's value for its shareholders (Gitman & Zutter, 2012).

2.7.1 Payback Period (PP)

The payback period refers to the duration required for a company to recoup its original investment in a project through the cash flows generated by that project. In other words, it is the length of time it takes for the cumulative cash inflows from the project to equal the initial outlay (Gitman & Zutter, 2012). Here is the formula to calculate the payback period:

Payback Period = Initial Investment / Sum of Cash Inflows for Each Period

Where:

- Initial Investment = The initial cash outlay required to acquire the asset or undertake the project.

- Sum of Cash Inflows for Each Period = The expected cash inflows or savings resulting from the investment.

When using the payback period method for making capital budgeting decisions, the following decision criteria are typically applied:

- If the payback period is less than the maximum acceptable payback period, accept the project. In this scenario, if the calculated payback period for a project is shorter than the predetermined maximum acceptable payback period set by the company, the project should be accepted or approved for investment.
- If the payback period is greater than the maximum acceptable payback period, reject the project. Conversely, if the calculated payback period for a project exceeds the maximum acceptable payback period, the project should be rejected or not approved for investment.

2.7.2 Discounted Payback Period

The discounted payback period is a financial analysis tool used to evaluate investment projects. It calculates how long it takes for an investment to recoup its initial cost, taking into account the time value of money. This method adjusts future cash flows by discounting them to their present value, providing a more accurate measure of when a project becomes profitable. By considering the timing of cash flows, the discounted payback period offers a more realistic assessment of an investment's financial viability compared to the simple payback period.

2.7.3 Net Present Value (NPV)

According to Gitman and Zutter (2012), a net present value (NPV) of a project is calculated by deducting the initial cash outlay or investment required for the project from the present value of all future cash inflows generated by the project. The present value of the future cash inflows is calculated by discounting them at a rate equal to the firm's cost of capital, which represents the required rate of return for the investment given its risk profile. Mathematically, the NPV can be expressed as follows:

NPV = Present value of cash inflows - Initial investment

or $$NPV = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} - CF_0$$

The decision criteria based on the NPV method are straightforward:

- If the NPV is positive, the project is considered acceptable and should be undertaken, as it adds value to the firm.
- If the NPV is negative, the project ought to be rejected, as it would diminish the firm's value.

2.7.4 Profitability Index (PI)

The profitability index (PI) is a variation of the net present value (NPV) method used in capital budgeting decisions. It is calculated by dividing the present value of a project's cash inflows by the initial cash outflow. The decision rule for the PI is that a project is acceptable if the index is greater than 1.0. This is because a PI greater than 1.0 means that the present value of the cash inflows is greater than the initial investment, which is the same criterion as a positive NPV (Gitman & Zutter, 2012).

2.7.5 Internal Rate of Return (IRR)

The internal rate of return (IRR) is the discount rate that equates the net present value (NPV) of an investment opportunity with 0. It is the rate of return that the firm will earn if it invests in the project and receives the given cash inflows. In other words, the IRR is the discount rate

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that makes the present value of the project's cash inflows equal to the initial investment. If a project's IRR is greater than the firm's cost of capital, it indicates that the project is expected to generate a return higher than the cost of financing, and therefore, it would be considered a good investment (Gitman & Zutter, 2012). The IRR can be calculated using the following equation:

$$\$0 = \sum_{t=1}^{n} \frac{CF_t}{(1 + IRR)^t} - CF_0$$

Where:

- CF0 = initial investment
- IRR = internal rate of return
- n = number of periods

When using IRR to make accept-reject decisions, the decision criteria are as follows:

- If the IRR is greater than the cost of capital, accept the project.
- If the IRR is less than the cost of capital, reject the project.

2.7.6 Modified Internal Rate of Return (MIRR)

The MIRR is a financial metric used to evaluate the attractiveness of an investment opportunity. It is a variation of the regular Internal Rate of Return (IRR) calculation that addresses some shortcomings (*Modified Internal Rate of Return (MIRR) - Overview, How to Calculate*, n.d.). The MIRR formula takes into account three main factors:

- The compounded future value of all the cash inflows from the investment, assuming they are reinvested at a specified reinvestment rate.
- The present value of all the cash outflows required for the investment, using a specified finance rate to discount them.
- The overall length of time being considered for the investment.

2.8 Financial Risk Analysis

2.8.1 Sensitivity Analysis

Sensitivity analysis is a behavioral approach that shows how changes in a variable, such as unit sales, affect the NPV or IRR of a project. It is a "what if" approach that is used to assess the impact of different scenarios on the project's profitability (Gitman & Zutter, 2012).

METHODOLOGY

3.1 Research Design

According to the University of Southern California Libraries (2024), research design is the comprehensive strategy and analytical framework selected by the researcher to cohesively and logically integrate the various components of the study. This approach ensures a thorough investigation of the research problem. It serves as a blueprint for collecting, measuring, and interpreting information and data. Therefore, this section will outline each step required to assess the financial feasibility of the investment project for the new branch that PT. Crown Teknologi Indonesia plans to establish. Figure 3.1 provides an overview of these stages:

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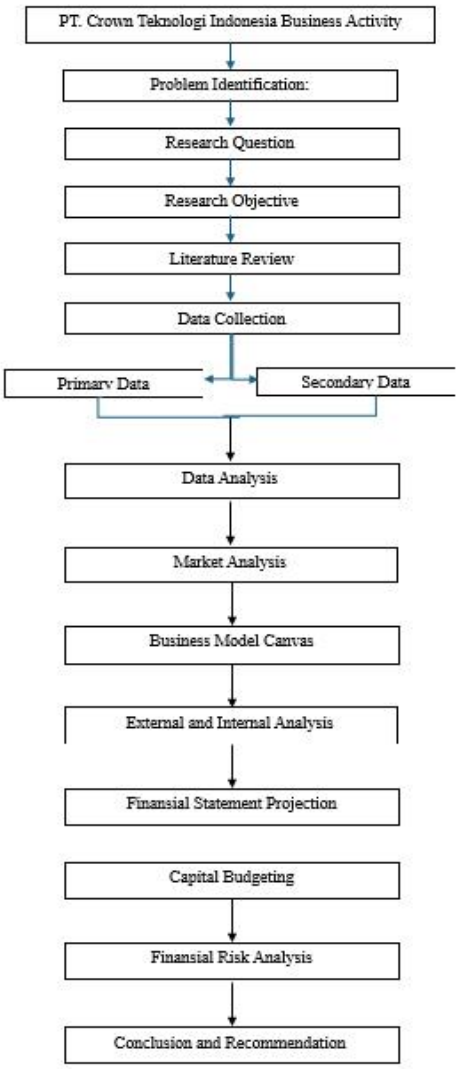

Figure 3.1 Research Design (Source: author)

3.2 Data Collection

According to Scribbr.com, data collection is an organized method of obtaining observations or measurements, enabling researchers to gather pertinent information for their research problem (Bhandari, 2020). It is a crucial step in research that ensures the information obtained is accurate and reliable. There are two types of data, primary and secondary data. The primary data is first-hand knowledge or data that is collected by the researcher from the main source. Also, the secondary data is research data that was previously collected by others and is used by the researcher for analysis. In this research will be conducted with both type data, primary and secondary data. The primary data will be collected by doing an interview with the owner of the company to gather information about the current condition of this project planning. While, the secondary data collected through an online database to know the market condition including risk, demand and so on.

3.3 Data Analysis

In this part, the researcher will conduct a step by step data analysis after managing to collect all the necessary information. The first step of this research is creating the assumption by considering the company's external and internal factors. Then followed by constructing the

financial statement and conducting the feasibility analysis using capital budgeting techniques. The last step is assessing the risk analysis using sensitivity analysis.

1. Market Analysis

   The market analysis for PT. Crown Teknologi Indonesia's (CTI) expansion will involve a comprehensive examination of the market landscape using the 4P's Marketing Mix Analysis and the TAM-SAM-SOM framework. These analyses will provide insights into the potential market size, target segments, and strategic positioning necessary for successful market entry and expansion.

2. Business Model Canvas Analysis

   The Business Model Canvas (BMC) provides a comprehensive framework to outline and analyze the key components of CTI's business model. This analysis will help identify the value proposition, customer segments, key resources, and other critical elements essential for the company's success, particularly in the context of its expansion into the Indonesian medical device market.

3. External Analysis

   The external analysis for PT. Crown Teknologi Indonesia's (CTI) expansion involves examining the macro-environmental and industry-specific factors that could impact the company. This analysis will utilize the PESTLE framework and Porter's Five Forces framework to provide a comprehensive understanding of external influences on CTI's business environment.

4. Internal Analysis

   The internal analysis for PT. Crown Teknologi Indonesia (CTI) will include a SWOT analysis and a TOWS analysis. These analyses will provide a comprehensive understanding of CTI's internal strengths and weaknesses, as well as external opportunities and threats. This will help CTI formulate strategic actions to leverage its strengths, address its weaknesses, capitalize on opportunities, and mitigate threats.

5. Create Assumption

   To conduct a thorough financial analysis for PT. Crown Teknologi Indonesia's (CTI) expansion, several key assumptions will be made. These assumptions will serve as the basis for financial projections, risk assessments, and investment decisions.

6. Constructing Pro Forma Financial Statement

   The creation of projected financial statements forms a crucial step in the analysis process. Using the carefully developed assumptions from the market analysis, BMC analysis, also internal and external analyses, three key financial documents are prepared: the Income Statement, Balance Sheet, and Cash Flow Statement. The Income Statement projects future revenues, expenses, and profitability. The Balance Sheet forecasts the company's assets, liabilities, and equity position over time. The Cash Flow Statement predicts the inflows and outflows of cash, including operational, investing, and financing activities. Together, these pro forma financial statements provide a comprehensive forecast of the company's financial performance, offering

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valuable insights into its projected financial health, liquidity, and overall viability in the coming periods.

7. Feasibility Analysis using Capital Budgeting

   The feasibility analysis employs capital budgeting techniques to assess the financial viability of the project or investment. This crucial step involves applying several key methods: Net Present Value (NPV) calculates the difference between the present value of cash inflows and outflows over time; Internal Rate of Return (IRR) determines the discount rate at which the NPV becomes zero; Payback Period measures how long it takes to recover the initial investment; and Profitability Index compares the present value of future cash flows to the initial investment.

8. Financial Risk Analysis

   The final stage of the analysis process focuses on assessing risk through two primary methods which is sensitivity analysis. Sensitivity analysis examines how changes in specific variables, such as sales volume, price, or costs, impact the overall financial outcomes. This helps identify which factors have the most significant influence on the project's success. This risk analysis techniques offer valuable insights into the project's resilience to various changes and uncertainties, enabling decision-makers to better understand the potential risks and variability inherent in their financial projections. This information is crucial for developing robust strategies and contingency plans.

DATA ANALYSIS

4.1 Current Business Stage

PT Crown Teknologi Indonesia (CTI), founded in 2022 in Padang, Sumatera Barat, is presently in an expansion and commercialization phase. Starting production in 2023, CTI specializes in creating advanced in vitro diagnostic tools, including Nucleic Acid Amplification Tests (NAAT) and Rapid Diagnostic Tests (RDT). The company operates under the brand name "CRown_Lab," emphasizing high-quality, cost-effective healthcare solutions.

CTI has established strategic collaborations with renowned universities and research institutions to accelerate the development and commercial launch of its products. These partnerships enable CTI to stay at the forefront of biotechnological innovations and ensure the highest standards in product development.

The company's primary mission is to support the Indonesian government's health initiatives by supplying essential medical devices and laboratory materials, fostering local manufacturing capabilities, and reducing dependency on imported healthcare products. CTI's portfolio includes diagnostic kits for detecting various pathogens, such as Mycobacterium tuberculosis, Mycobacterium leprae, Salmonella typhi, Helicobacter pylori, and high-risk Human Papillomavirus (HPV) types.

CTI's vision is to become a leading biotechnology company in Indonesia, committed to improving public health through innovative and accessible diagnostic solutions. The company invests heavily in research and development to continuously improve its product offerings and support the healthcare sector with reliable and accurate diagnostic tools. This

phase of growth is marked by significant efforts in product diversification, regulatory compliance, and market penetration, reflecting CTI's dedication to enhancing healthcare quality and accessibility in Indonesia and beyond

4.2 Project Overview

In response to the rapidly expanding global and regional medical device markets, CTI is embarking on a new project to establish a dedicated production facility for medical gloves. This new branch is scheduled to commence operations in early 2028, marking a significant milestone in CTI's growth trajectory and reflecting market confidence. This initiative capitalizes on the rapidly growing demand for medical gloves in Indonesia and the Asia-Pacific region, driven by increased awareness of infection control, rising healthcare needs, and an expanding geriatric population.

The Asia-Pacific gloves market is projected to grow at a CAGR of 11.1% from 2022 to 2029, reaching USD 9,817.60 million, while Indonesia's market is expected to grow from USD 40.951 million in 2022 to USD 70.100 million by 2029 at a CAGR of 7.98%. The new facility will produce a range of medical gloves, including surgical gloves made from advanced materials like nitrile to ensuring durability and high tactile sensitivity to meet international standards. This project aligns with the Indonesian government's TKDN (Tingkat Komponen Dalam Negeri) policy, which mandates a minimum percentage of local content in medical devices, offering CTI access to government incentives and public healthcare contracts. An initial investment of IDR 117 billion will be allocate for this project, covering facility setup, state-of-the-art equipment acquisition, and other essential activities. With this expansion, CTI aims to reduce Indonesia's reliance on imported medical gloves, enhance local production capabilities, and position itself as a leading player in the medical device industry, advancing healthcare solutions and innovation.

The production process for the new medical gloves facility will involve several critical steps to ensure high-quality output and compliance with international standards.The production process, as outlined in the flowchart, involves steps from synthetic rubber preparation to packaging and shipping, with optional processes like polymer coating and chlorination like showed below:

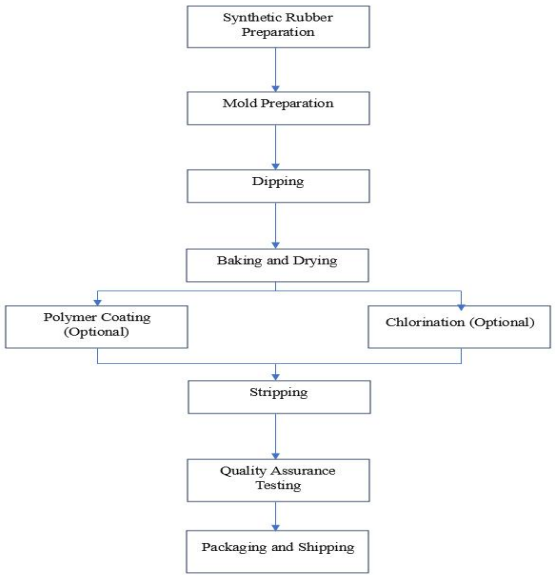

Figure 4.1 Production Process

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4.3 Market Analysis

4.3.1 Marketing Mix Analysis

Below is a detailed overview of the product that will be manufactured by PT. Crown Teknologi Indonesia, including its pricing, distribution, and promotional strategies based on the 4P's marketing mix framework:

Table 4.1 4P's Marketing Mix Analysis

Product	Price (Competitive based pricing)	Place	Promotion
Medical glove (Nitrile)	Rp100,000 (e-katalog)	1. Offline transaction 2. Online transaction through e-commerce and e-katalog (government website) 3. Retail or distribution partnership.	1. Traditional marketing such as direct sales though the customer and consumer. 2. Strategic partnership 3. Social media promotion.

4.3.2 TAM SAM SOM Analysis

To analyze the market opportunities for PT. Crown Teknologi Indonesia (CTI) in the medical devices sector, the framework uses the Total Addressable Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtainable Market (SOM) framework.

Table 4.2 TAM SAM SOM Analysis

Parameter	Description	Data	Source
TAM	The entire revenue opportunity available if CTI captures 100% of the Indonesian medical devices market.	$3.6 billion Or	Statista (2021)
SAM	Focuses specifically on the medical gloves segment within the Indonesian medical devices market. This includes gloves used in surgical procedures and other medical settings to prevent infection and contamination.	$40.951 million	Data Bridge Market Research and other market research reports (2022)
	Total capacity 6 rubber glove industry companies in Indonesia	13,240,000,000 pcs	Bizteka Journal (2021)
SOM	The realistic portion of the SAM that CTI can capture, considering factors like competition, production capacity, market reach, and regulatory compliance. It includes both the domestic market for medical gloves and potential exports.	CTI targets 0.8% of the industry capacity for the initial year and increases as the capacity increases.	

The table below presents a 10-year financial projection for the Serviceable Obtainable Market (SOM) target. It breaks down the target, showing the percentage increase attributed to planned capacity expansion. Additionally, the table displays the production distribution percentage for each product in the company's portfolio.

Table 4.3 SOM Calculation

Year	Target Capacity (Yearly)	Percentage of SAM	Total Nitrile Gloves Production
1	109,500,000	0.80%	105,920,000
2	120,450,000	0.88%	116,512,000
3	132,495,000	0.97%	128,163,200
4	145,744,500	1.06%	140,979,520
5	160,318,950	1.17%	155,077,472
6	176,350,845	1.29%	170,585,219
7	193,985,930	1.42%	187,643,741
8	213,384,522	1.56%	206,408,115
9	234,722,975	1.71%	227,048,927
10	258,195,272	1.89%	249,753,819

By analyzing TAM, SAM, and SOM, it is evident that PT. Crown Teknologi Indonesia (CTI) has significant growth opportunities in the Indonesian medical devices market, particularly in the medical gloves sector. The company's expansion plans, compliance with government policies, and focus on high-quality standards position CTI to capitalize on the growing demand for medical devices in Indonesia. As the country seeks to enhance its healthcare infrastructure and reduce reliance on imports, CTI's strategic initiatives and market positioning will play a crucial role in advancing healthcare solutions.

4.4 Business Model Canvas

The Business Model Canvas (BMC) for PT. Crown Teknologi Indonesia's (CTI) medical gloves production project provides a structured overview of the key elements necessary for the business to succeed. Here's the BMC breakdown:

Figure 4.2 Business Model Canvas Analysis

This Business Model Canvas outlines the strategic approach CTI will take in establishing and growing its medical gloves production business, focusing on high-quality products, compliance with local regulations, and strong customer relationships.

4.5 External Analysis

4.5.1 The porter's Five Forces Analysis

The aim of applying Porter's Five Forces analysis to PT. Crown Teknologi Indonesia's (CTI) new medical gloves project is to assess the competitive dynamics and market attractiveness of the medical gloves sector. This analysis helps CTI understand competitive pressures, identify potential risks and opportunities, and develop a strategy for successful market entry and growth.

Table 4.4 Porter's Five Forces Analysis

Force Factors	Analysis	Force Level
Threat of New Entrants	**Capital Requirements**: Significant investment is needed for establishing a manufacturing facility, sourcing high-quality raw materials, and acquiring advanced production technology. **Economies of Scale**: Established players can produce at a lower cost due to economies of scale, making it harder for new entrants to compete. **Regulatory Compliance**: Strict regulations and the need to meet international quality standards and the local TKDN policy can deter new entrants. **Brand and Reputation**: Existing firms with established brands have a competitive edge. Building trust in medical products, especially in the post-pandemic era, is crucial. ***Barriers to Entry: Moderate to High*** Overall, while there are substantial barriers, the growing demand and government incentives for local production (TKDN policy) could lower these barriers somewhat.	Low to Moderate
Bargaining Power of Supplier	**Concentration of Suppliers**: The market for raw materials (like latex, nitrile) and manufacturing equipment is moderately concentrated, giving suppliers some bargaining power. **Switching Costs**: High-quality standards and regulatory requirements mean that switching suppliers can be costly and time-consuming, giving more power to existing suppliers. **Availability of Substitutes**: While there are multiple materials available for gloves, the specific properties required for medical applications (durability, sensitivity) limit the options. Overall, suppliers have moderate bargaining power, which can influence costs and terms, especially if they control high-quality or specialized raw materials.	Moderate to high
Bargaining	**Buyer Concentration**: Major buyers, such as hospitals,	Moderate

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Power of Buyers	government healthcare agencies, and large healthcare providers, often have significant negotiating power due to bulk purchasing. **Price Sensitivity**: The healthcare sector, including government procurement, is highly price-sensitive, especially in cost-sensitive markets like Indonesia. **Availability of Alternatives**: The market offers a range of suppliers for medical gloves, which increases competition and gives buyers more leverage. Overall, buyers have moderate bargaining power due to the availability of alternatives and the importance of price and quality in procurement decisions.	
Threat of Substitute Product	**Availability of Substitutes**: Alternatives to disposable gloves (like reusable gloves or different types of PPE) exist but are less convenient and may not meet the stringent hygiene and safety standards required in medical settings. **Cost and Performance of Substitutes**: Disposable gloves are a standard in the industry due to their convenience, safety, and cost-effectiveness. Substitutes may not offer the same balance of these factors. Overall, the threat of substitutes is low to moderate, as disposable medical gloves are essential in maintaining infection control in healthcare settings.	Low to Moderate
Rivalry among Existing Competitor	**Number of Competitors**: The market for medical gloves is competitive, with both local and international players. **Product Differentiation**: While there is room for differentiation in terms of material and quality, products are generally similar, increasing competition. **Industry Growth Rate**: The market is growing, particularly in response to heightened hygiene awareness post-COVID-19, which encourages more entrants and intensifies competition. Overall, rivalry among competitors is high, driven by market growth, the similarity of products, and the presence of established brands.	High

Below is the radar chart represents an analysis based on Porter's Five Forces framework, which helps understand the competitive environment of an industry. Each axis of the radar chart corresponds to one of the five forces:

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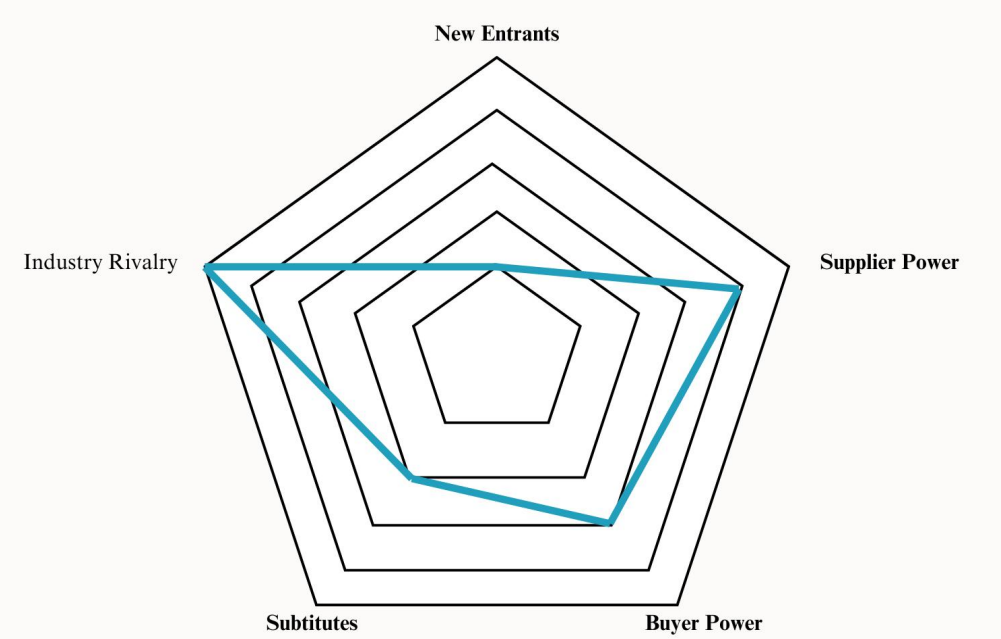

Figure 4.3 Radar Chart Porter 5 Forces

In summary, By addressing these key areas, CTI can strategically position itself in the competitive landscape and leverage growth opportunities in the medical gloves market.

4.5.2 PESTEL Analysis

Table 4.5 PESTLE Analysis

Factors	Analysis	Impact
Politics	**Government Policies (TKDN Regulation):** The Indonesian government's TKDN policy requires local sourcing of medical products, including gloves, which positively impacts CTI by ensuring local market access and protection from import competition. This regulation also promotes local manufacturing and can provide government incentives.	**Positive**
Economic	**Economic Growth:** A growing economy can lead to increased disposable income and higher healthcare spending. In the first quarter of 2024, Quoting data from BPS – Statistics Indonesia, Indonesia's economy grew by 5.11% year-on-year, driven by strong domestic demand and state budget support. This growth has positively impacting employment rates and living standards. So that, it will be impacted to the people access to the health services.	**Positive**
	Exchange Rates: Fluctuations in exchange rates can impact the cost of imported raw materials and exported products. As of July 1, 2024, the rupiah to dollar exchange rate is at IDR 16,390.	**Negative**

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Figure 4.4 Exchange Rate USD to IDR

Market Growth: The medical gloves market in Indonesia is growing, with a projected CAGR of 7.98%. This provides a positive impact by creating significant revenue opportunities for CTI. The overall economic conditions in Indonesia are also favorable for investment, but fluctuations in economic stability or inflation could pose risks to cost structures and profitability.	**Positive**
Inflation Rates: According to Statista, the annual inflation rate of the healthcare sector in Indonesia is 2.79%. High inflation rates can increase the cost of raw materials and production, impacting pricing strategies. It's important to monitor inflation to maintain profitability.	**Negative**

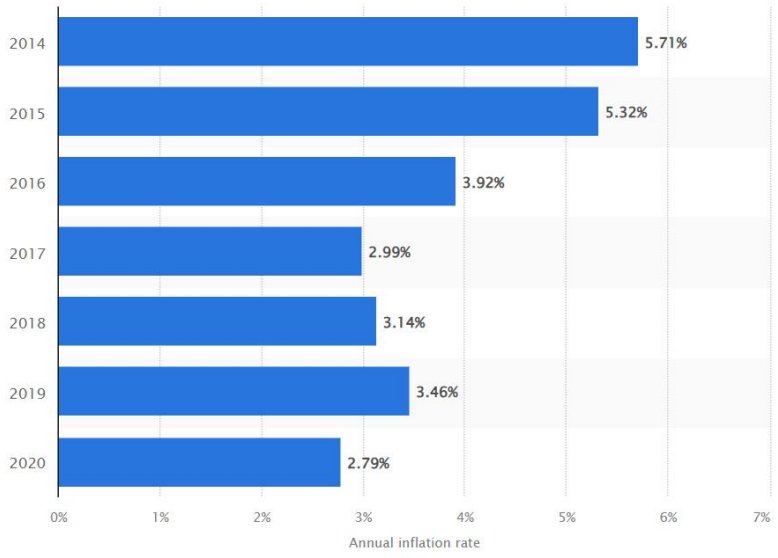

Figure 4.5 Annual Inflation Rate (Source: Statista)

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Social	**Population Growth and Aging Population:** The global population is projected to increase from 8 billion to 9.7 billion by 2050, with the aging population rising from 761 million in 2021 to 1.6 billion by 2050. This demographic shift drives increased demand for medical devices, including gloves, due to growing healthcare needs. In Indonesia, the population reached 278.7 million in early 2024, with a notable elderly demographic comprising 11.75% of the total (BPS, 2023). These trends positively impact CTI by expanding market opportunities and increasing local demand. However, they also pose logistical and supply chain challenges due to the greater demand on healthcare infrastructure.	**Positive**
	Increased Health Awareness: Post-pandemic, there is heightened awareness of hygiene and infection control, which drives demand for medical gloves. This trend has a positive impact on CTI, boosting potential sales.	**Positive**
Technology	**Automation and AI**: Advances in automation and AI in Industry 4.0 improve production efficiency, reduce costs, and enhance product quality for CTI. Intelligent manufacturing processes contribute to higher reliability and resource efficiency. However, the rapid pace of technological change may require continuous investment in new technologies.	**Positive**
Legal	**Medical Device Regulations**: Compliance with stringent medical device regulations in Indonesia, such as halal certification, ISO 13485:2016 - Medical Devices Quality Management Systems, ISO 9001:2015 - Quality Management Systems, FDA 21 CFR Part 820 - Quality System Regulation, and comprehensive registration requirements, ensures product quality and market access but may also increase operational complexity and costs. **Health and Safety Standards**: Currently the government Ensuring that products meet health and safety standards protects consumers and reduces the risk of recalls and legal actions.	**Mixed**
Environment	**Sustainability Practices**: Implementing sustainable manufacturing practices and complying with environmental regulations help reduce CTI's carbon footprint and appeal to eco-conscious consumers. Lean-green manufacturing techniques improve sustainability and customer satisfaction, while effective waste management strategies ensure compliance with environmental regulations and minimize environmental impact.	**Positive**

4.6 Internal Analysis
4.6.1 SWOT Analysis

Below is the SWOT analysis that consists of identification of the strengths and weaknesses and also the threats and opportunities. The SWOT analysis explains the internal conditions of

the company and the external conditions that previously analyzed using Porter's 5 Forces and PESTLE framework.

Table 4.6 SWOT Analysis

Strengths	• **Responsive Action Through Market Conditions (S1)**: CTI's ability to quickly adapt to market changes ensures competitiveness and relevance. • **Capital Resource Availability (S2)**: Adequate financial resources to execute plans effectively, supporting growth and innovation. • **Potential Economies of Scale (S3)**: Ability to reduce costs per unit through large-scale production, increasing profitability.
Weaknesses	• **New Player in the Glove Industry (W1)**: Lack of established presence and brand recognition in the medical gloves market.
Opportunities	• **Growing Market Demand (O1)**: Increasing demand for medical gloves driven by population growth, aging demographics, and heightened health awareness. • **Technological Advancements (O2)**: Adoption of AI and automation to improve manufacturing efficiency, product quality, and cost-effectiveness. • **Government Support for Local Production**: Policies such as TKDN provide incentives and protection from import competition.
Threats	• **Intense Competition (T1)**: Strong presence of established domestic and international competitors in the medical gloves market. • **High Barrier to Entry (T2)**: Significant initial investment and regulatory compliance required to enter and compete in the market. • **Price Sensitivity (T3)**: Market demand and trends can significantly impact pricing, affecting profitability.

4.6.2 TOWS Analysis

Table 4.7 TOWS Analysis

	Strengths	**Weaknesses**
Opportunities	**Expand Market Reach**: Utilize responsive market actions (S1) and government support (O3) to rapidly capture growing demand (O1). **Innovation and Investment**: Use available capital resources (S2) to invest in technological advancements (O2) for efficiency gains and product differentiation. **Achieve Economies of Scale**: Leverage economies of scale (S3) to lower costs, making products more competitive in a growing market (O1).	**Build Brand Recognition**: Utilize government support (O3) and growing market demand (O1) to establish CTI as a reliable new player (W1) in the industry. **Adopt Advanced Technologies**: Offset the lack of experience (W1) by investing in the latest technologies (O2) to improve product quality and operational efficiency. **Utilize Government Incentives**: Tap into government incentives (O3) to bolster CTI's market position and mitigate initial entry challenges (W1).

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Threats	**Competitive Advantage**: Use responsive market strategies (S1) and strong capital resources (S2) to stay agile and competitive (T1). **Investment in Compliance and Scale**: Leverage capital resources (S2) to meet high entry barriers (T2) and achieve economies of scale (S3) to remain cost-effective. **Strategic Pricing**: Utilize economies of scale (S3) to maintain competitive pricing despite market sensitivity (T3).	**Market Entry Strategy**: Develop a robust market entry strategy to overcome the new player disadvantage (W1) and address high entry barriers (T2). **Cost Management**: Focus on strict cost management to cope with price sensitivity (T3) and competitive pressures (T1). **Compliance and Partnerships**: Collaborate with industry partners and regulatory bodies to navigate stringent regulations and gain market foothold despite being new (W1).

By applying this SWOT and TOWS analysis, CTI can strategically navigate the competitive landscape, leverage its strengths, address its weaknesses, seize opportunities, and mitigate threats to achieve successful market entry and sustainable growth in the medical gloves sector.

4.7 Financial Feasibility Analysis

4.7.1 Initial Investment

The initial capital requirement for the Glove (Nitrile) Production Project is IDR **117,038,761,637**, which is divided into Capital Expenditure (CAPEX) and Operating Expenditure (OPEX). CAPEX will be used for the purchase of production equipment, facilities, utilities, and construction. This includes investment in high-quality machinery and technology, land acquisition, building construction, and essential utilities like water, electricity, and gas connections to support production operations. On the other hand, OPEX consists of funds needed for the Cost of Goods Sold (COGS), which includes raw materials, labor, and other direct production costs, amounting to IDR 72,378,921,637, and operating costs covering indirect expenses such as salaries, utilities, maintenance, logistics, marketing, and administrative expenses, totaling IDR 2,859,840,000. Additionally, while depreciation is a significant expense for financial reporting and tax purposes, it will be excluded from the initial operating cash flow calculation as it is a non-cash expense. This structured allocation of capital ensures the successful establishment and sustainable operation of CTI's nitrile glove production facility. Below is the calculation of the initial investment needed to implement the project:

Table 4.8 Initial Investment

Item		Value
Capital expenditure		Rp41,800,000,000
COGS	To cover 1 year COGS and operating expenses requirements, minus by the depreciation expense. The detailed calculation of the initial operating expenditure needed can be seen in Appendix.	Rp 72,378,921,637
Operating expense		Rp 2,859,840,000

Operating expenditure	**Rp 75,238,761,637**
Total initial investment requirement	**Rp 117,038,761,637**

4.7.1.1 Capital Expenditure

The capital expenditure of the project consists of fixed asset investments as shown below:

Table 4.9 Capital Expenditure

Capital Expenditure		
Land, Building, and Facilities	**Value**	**Remarks**
Land	Rp 1,800,000,000	Land Price in Padang with the area 1,500 m2.
Plant (Office, Lab, and Warehouse)	Rp 17,000,000,000	The plant cost being 10 times the land cost implies that the expenses for construction, facilities, and equipment are significantly higher than the initial land acquisition cost.
Mechinary Equipment	Rp 20,000,000,000	High-quality and up-to-date machinery ensures effective production and quality control. (Source: Alibaba)
Vehicles	Rp 3,000,000,000	Forklift and Delivery Trucks
Total Capital Expenditures		Rp41,800,000,000

4.7.1.2 Operating Expenditure

The operating expenditure consists of the cost of goods sold, depreciation expense, and operating expense as shown below.

- Cost of Good Sold (COGS)

Table 4.10 Cost of Good Sold (COGS)

Cost of Good Sold (COGS)			
Item	**Detail**	**Assumption**	**Value**
Fixed Cost			
Direct Labour	The company's goal is to employ approximately 150 individuals, each earning around 4 million rupiah per month. This results in a total monthly salary expenditure of	Benchmarking on the leading company cost revenue: Increase annually as the percentage of annual sales growth.	Rp 72,378,921,637

	600 million rupiah (150 employees × 4 million rupiah). The salaries for skilled labor and permanent staff are expected to remain constant, providing a stable cost base for the company.		
Variable Cost			
Raw material			
Nitrile Butadine Rubber Latex	The amount of nitrile material required per glove depends on its thickness and surface area.		
Polimer Coating	Polymer coating is used to improve the glove's surface for easier donning. The amount needed depends on the coating thickness and the surface area of the gloves.		
Chlorine	Chlorination is used to make the nitrile gloves harder and slicker. The amount of chlorine needed is based on the concentration of the chlorine solution and the surface area of the gloves.		
Packaging	Current market price packaging		
Other related cost	associated cost		
Total COGS			**Rp 72,378,921,637**

- **Depreciation**

Item	Value	Lifespan (Years)	Salvage Value	Depreciation Method	Source
Plant (Office, Lab, and Warehouse)	Rp17,000,000,000	20	20%	Straight Line	Indonesia Pocket Text Book 2023 (PWC)
Machinary Equipment	Rp22,000,000,000	16	10%	Double Declining Balance	Minister of Finance Regulation Number 96 / PMK.03 / 2009. (Pajakku)

Other Equipment	Rp3,000,000,000	8	10%	Double Declining Balance	Minister of Finance Regulation Number 96 / PMK.03 / 2009. (Pajakku)

Table 4.11 Depreciation

- **Operating Expense**

Table 4.12 Operating Expense

Item	Assumption	Growth	Annual Expense at Year-1
Marketing Expense	Determined based on the strategic plan of the company, these costs consist of online advertising, traditional advertising, partnership costs, and any marketing-related costs.	1% and Increase annually as the percentage of annual sales growth.	Rp 953,280,000
Reasearch and Developme nt	Determined based on the strategic innovation goals of the company, these costs consist of research, development, and testing of new products and technologies.	1% and Increase annually as the percentage of annual sales growth.	Rp 953,280,000
G&A Expense	Determined based on the operational requirements of the company, these costs consist of administrative, electricity, water, gas, internet, and other utility expenses.	1% and Increase annually with the inflasion rate	Rp 953,280,000
Tax Rate	Indonesia's corporate income flat tax rate is set at 22 percent for the 2023 fiscal year. (Source: PWC)		
Operating Expense			Rp 2,859,840,000

4.7.2 Financing Plan

The financing strategy that PT Crown Teknologi Indonesia will use to fund the initial investment is equity financing which mean the capital came from the owner's investment and some source of other equity investors.

4.7.2.1 Weighted Average Cost of Capital

Table 4.13 Weighted Average Cost of Capital

Capital Asset Pricing Model

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Levered Beta	Levered beta determined from the leading companies in Indonesia that focus on the medical devices that already listed: PT Indofarma, PT. Mark Dynamic Indonesia	0.45
Debt to Equity ratio	Benchmark to the one of leading company using average: PT Mark Dynamic Indonesia	0.16
Cost of Equity Calculation		
Unlevered Beta	Formula: Levered beta / (1+(1-Tax rate)*D/E ratio)	0.40
Projected Debt to Equity	Longterm debt / Equity owner's	1.02
Levered Beta	Unlevered beta * (1+(1-Tax rate)*D/E ratio)	0.71
Risk-Free Rate	IBPA 10 Years Government Bond Yield	6.96%
Risk Premium	Damodaran equity risk premium for Indonesia	7.38%
Weight of CoE and CoD	Strategic Planning	0.5
Cost of Equity	Risk free rate + (Levered beta * Risk Premium)	**12.21%**
Cost of Debt	Total interest rate x (1 – total tax rate)	**5.51%**
WACC	The weighted average of the cost of debt and the cost of equity, using their respective proportions in the total capital structure. Cost of debt after multiplied by the weighted + Cost of equity after multiplied by the weighted	**8.82%**

4.7.3 Sales Projection

Table 4.14 Sales Projection

Y1	Y2	Y3	Y4	Y5

	R 105,920,000,000.00	Rp 119,986,582,026.67	Rp 135,921,260,068.37	Rp 153,972,124,436.95
Y6	**Y7**	**Y8**	**Y9**	**Y10**
Rp 174,420,212,788.65	Rp 197,583,885,426.15	Rp 223,823,782,934.92	Rp 253,548,439,177.00	Rp 287,220,644,467.90

The sales projection, based on the Serviceable Obtainable Market (SOM) analysis, reflects the company's strategic goals by targeting a realistic share of the market it can capture. By multiplying a certain percentage of the Serviceable Available Market (SAM) with industry capacity, the projection aligns with the company's operational capabilities and market penetration goals. This approach ensures efficient resource allocation, supports accurate revenue forecasting, and manages risk by setting achievable sales targets within the industry context.

4.7.4 Financial Statement Projection

4.7.4.1 Assumption for the Financial Statement Projection

Table 4.15 Assumption

Item	Number	Source
Inflation rate	2.98%	Average inflation growth rate from Jan 2019 - Dec 2023. (Source: bi.go.id)
Terminal growth rate	2.99%%	Average GDP contribution growth of the medical sector in Indonesia from 2009-2021. The average GDP contribution growth of the medical sector in Indonesia was chosen as a benchmark for the terminal growth rate because it reflects the long-term medical industry trend. (Source: Statista)
Terminal cash flow calculation	The terminal cash flow will be calculated using the perpetual growth method, with the formula: CFn x (1 - r)/(WACC - r)	

4.7.4.2 Income Statement Projection

Table 4.16 Income Statement Projection

	0	1	2	3	4	5	6	7	8	9	10
Net Sales	-	-	105,920,000,000.00	119,986,582,026.67	135,921,260,068.37	153,972,124,436.95	174,420,212,788.65	197,583,885,426.15	223,823,782,934.92	253,548,439,177.00	287,220,644,467.90
Cost of Goods Sold	-	-	72,378,921,636.71	81,991,119,882.59	92,879,854,902.29	105,214,655,672.76	119,187,565,268.95	135,016,130,664.04	152,946,790,459.57	173,258,710,444.69	196,268,131,782.35
Gross Profit	-	-	**33,541,078,363.29**	**37,995,462,144.07**	**43,041,405,166.08**	**48,757,468,764.19**	**55,232,647,519.70**	**62,567,754,762.11**	**70,876,992,475.35**	**80,289,728,732.32**	**90,952,512,685.55**
Selling Expenses	-	-	1,059,200,000.00	1,199,865,820.27	1,359,212,600.68	1,539,721,244.37	1,744,202,127.89	1,975,838,854.26	2,238,237,829.35	2,535,484,391.77	2,872,206,444.68
G&A Expenses	-	-	1,059,200,000.00	1,090,787,109.33	1,123,316,198.91	1,156,815,360.16	1,191,313,522.22	1,226,840,476.98	1,263,426,904.74	1,301,104,400.75	1,339,905,502.48
R&D Expenses	-	-	1,059,200,000.00	1,090,787,109.33	1,123,316,198.91	1,156,815,360.16	1,191,313,522.22	1,226,840,476.98	1,263,426,904.74	1,301,104,400.75	1,339,905,502.48
Depreciation & Amortization	-	-	3,897,469,299.39	19,179,403,939.02	16,713,723,413.82	14,576,800,291.98	12,724,800,253.05	11,119,733,552.64	9,728,675,745.62	8,523,092,312.87	7,478,253,337.82
Total Operating Profit	-	-	**26,466,009,063.90**	**15,434,618,166.12**	**22,721,836,753.75**	**30,327,316,507.53**	**38,381,018,094.32**	**47,018,501,401.25**	**56,383,225,090.91**	**66,628,943,226.18**	**77,922,241,898.08**
Interest Expenses	-	-	305,472,273,589.59	307,430,101,415.49	205,136,713,984.01	59,822,335,358.51	60,822,322,550.27	61,477,720,586.73	61,710,587,095.89	61,505,620,255.78	60,862,998,856.57
Tax Expenses	-	-	-	-	-	-	-	-	-	1,127,131,053.49	3,753,033,469.13
Net Profit	-	-	**(279,006,264,525.68)**	**(291,995,483,249.37)**	**(182,414,877,230.26)**	**(29,495,018,850.98)**	**(22,441,304,455.95)**	**(14,459,219,185.48)**	**(5,327,362,004.98)**	**3,996,191,916.91**	**13,306,209,572.38**

4.7.4.3 Balance Sheet Projection

Table 4.17 Balance Sheet Projection

	0	1	2	3	4	5	6	7	8	9	10
Cash											
Excess Cash	-	7,910,694,544.50	4,528,538,861,152.88	4,152,718,881,344.10	2,345,470,880,123.57	0.00	(0.00)	-	-	-	-
Required Cash	-	-	17,310,694,544.50	19,625,982,944.31	22,249,238,455.23	25,221,374,841.24	28,588,739,804.92	32,403,836,610.13	36,726,141,749.91	41,623,030,703.59	47,170,827,422.84
Account Receivables	-	-	9,141,041,095.89	10,355,006,394.08	11,730,190,937.41	13,288,005,259.63	15,052,703,295.46	17,051,759,975.13	19,316,299,075.21	21,881,577,627.60	24,787,535,070.52
Inventories	-	-	11,897,904,926.58	13,477,992,309.47	15,267,921,353.80	17,295,559,836.62	19,592,476,482.57	22,194,432,437.92	25,141,938,157.74	28,480,883,908.72	32,263,254,539.56
Total Current Asset	-	**7,910,694,544.50**	**4,566,888,501,719.85**	**4,196,177,862,991.96**	**2,394,718,230,870.01**	**55,804,939,937.48**	**63,233,919,582.95**	**71,650,029,023.19**	**81,184,378,982.85**	**91,985,492,239.91**	**104,221,617,032.92**
Land	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00	1,818,000,000.00
Plant and Equipment, Net	-	41,250,019,745.45	155,177,729,542.67	135,998,325,603.65	119,284,602,189.83	104,707,801,897.85	91,983,001,644.81	80,863,268,092.17	71,134,592,346.54	62,611,500,033.67	55,133,246,695.85
Intangibles, Net	-	-	-	-	-	-	-	-	-	-	-
Asset under Construction	17,170,000,000.00	-	-	-	-	-	-	-	-	-	-
Total Fixed Asset	**18,988,000,000.00**	**43,068,019,745.45**	**156,995,729,542.67**	**137,816,325,603.65**	**121,102,602,189.83**	**106,525,801,897.85**	**93,801,001,644.81**	**82,681,268,092.17**	**72,952,592,346.54**	**64,429,500,033.67**	**56,951,246,695.85**
Total Asset	**18,988,000,000.00**	**50,978,714,289.94**	**4,723,884,231,262.52**	**4,333,994,188,595.61**	**2,515,820,833,059.84**	**162,330,741,835.34**	**157,034,921,227.76**	**154,331,297,115.36**	**154,136,971,329.40**	**156,414,992,273.58**	**161,172,863,728.77**
Account Payables	-	-	3,569,371,477.97	4,043,397,692.84	4,580,376,406.14	5,188,667,950.99	5,877,742,944.77	6,658,329,731.38	7,542,581,447.32	8,544,265,172.61	9,678,976,361.87
Accruals	-	-	158,880,000.00	163,618,066.40	168,497,429.84	173,522,304.02	178,697,028.33	184,026,071.55	189,514,035.71	195,165,660.11	200,985,825.37
Short-Term Debt	-	-	4,852,738,302,050.17	4,819,369,910,890.39	3,190,216,510,363.22	873,259,631,097.12	897,902,571,326.41	917,642,291,119.28	931,274,793,070.60	938,601,370,062.71	939,674,260,987.53
Current Portion of Long-Term Debt	-	2,224,603,854.25	6,675,635,956.55	7,146,935,855.08	7,651,509,526.45	8,191,706,099.02	8,770,040,549.61	9,389,205,412.41	10,052,083,314.53	10,761,760,396.53	10,761,760,396.53
Total Current Liability	-	**2,224,603,854.25**	**4,863,142,189,484.69**	**4,830,723,862,504.71**	**3,202,616,893,725.65**	**886,813,527,451.15**	**912,729,051,849.12**	**933,873,852,334.61**	**949,058,971,868.16**	**958,102,561,291.97**	**960,315,983,571.31**
Long-Term Debt	**9,588,000,000.00**	**28,598,763,163.44**	**81,419,009,721.03**	**74,272,073,865.95**	**66,620,564,339.49**	**58,428,858,240.48**	**49,658,817,690.87**	**40,269,612,278.46**	**30,217,528,963.93**	**19,455,768,567.40**	**8,694,008,170.87**
Owner's Equity	9,400,000,000.00	20,155,347,272.25	58,329,296,582.49	-	-	-	-	-	-	-	-
Retained Earnings	-	-	(279,006,264,525.68)	(571,001,747,775.05)	(753,416,625,005.31)	(782,911,643,856.29)	(805,352,948,312.24)	(819,812,167,497.72)	(825,139,529,502.70)	(821,143,337,585.78)	(807,837,128,013.41)
Total Equity	**9,400,000,000.00**	**20,155,347,272.25**	**(220,676,967,943.20)**	**(571,001,747,775.05)**	**(753,416,625,005.31)**	**(782,911,643,856.29)**	**(805,352,948,312.24)**	**(819,812,167,497.72)**	**(825,139,529,502.70)**	**(821,143,337,585.78)**	**(807,837,128,013.41)**
Total Liability & Equity	**18,988,000,000.00**	**50,978,714,289.94**	**4,723,884,231,262.52**	**4,333,994,188,595.61**	**2,515,820,833,059.84**	**162,330,741,835.34**	**157,034,921,227.76**	**154,331,297,115.36**	**154,136,971,329.40**	**156,414,992,273.58**	**161,172,863,728.77**
Balance Check	-	-	-	-	-	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

4.7.4.4 Net Cash Flow Projection

Table 4.18 Net Cash Flow Projection

Plot Area	0	1	2	3	4	5	6	7	8	9	10
Net Profit	-	-	(279,006,264,525.68)	(291,995,483,249.37)	(182,414,877,230.26)	(29,495,018,850.98)	(22,441,304,455.95)	(14,459,219,185.48)	(5,327,362,004.98)	3,996,191,916.91	13,306,209,572.38
Depreciation	-	-	3,897,469,299.39	19,179,403,939.02	16,713,723,413.82	14,576,800,291.98	12,724,800,253.05	11,119,733,552.64	9,728,675,745.62	8,523,092,312.87	7,478,253,337.82
(Increase)/Decrease in Account Receivables	-	-	(9,141,041,095.89)	(1,213,965,298.19)	(1,375,184,543.33)	(1,557,814,322.22)	(1,764,698,035.83)	(1,999,056,679.67)	(2,264,539,100.07)	(2,565,278,552.40)	(2,905,957,442.91)
(Increase)/Decrease in Inventory	-	-	(11,897,904,926.58)	(1,580,087,382.89)	(1,789,929,044.33)	(2,027,638,482.82)	(2,296,916,645.95)	(2,601,955,955.36)	(2,947,505,719.81)	(3,338,945,750.98)	(3,782,370,630.85)
Increase/(Decrease) in Account Payables	-	-	3,569,371,477.97	474,026,214.87	536,978,713.30	608,291,544.85	689,074,993.78	780,586,786.61	884,251,715.94	1,001,683,725.29	1,134,711,189.25
Increase/(Decrease) in Accruals	-	-	158,880,000.00	4,738,066.40	4,879,363.44	5,024,874.19	5,174,724.31	5,329,043.21	5,487,964.16	5,651,624.40	5,820,165.26
Total Cash Flow from Operating Activities	-	-	**(292,419,489,770.79)**	**(275,131,367,710.16)**	**(168,324,409,327.36)**	**(17,890,354,945.01)**	**(13,083,869,166.59)**	**(7,154,582,438.05)**	**79,008,600.86**	**7,622,395,276.10**	**15,236,666,190.95**
(Increase)/Decrease in Land	(1,818,000,000.00)	-	-	-	-	-	-	-	-	-	-
(Increase)/Decrease in Plant & Equipment	-	(41,250,019,745.45)	(117,825,179,096.62)	(0.00)	(0.00)	(0.00)	0.00	(0.00)	0.00	(0.00)	(0.00)
(Increase)/Decrease in Intangibles	-	-	-	-	-	-	-	-	-	-	-
(Increase)/Decrease in Asset under Construction	(17,170,000,000.00)	17,170,000,000.00	-	-	-	-	-	-	-	-	-
Total Cash Flow from Investing Activities	**(18,988,000,000.00)**	**(24,080,019,745.45)**	**(117,825,179,096.62)**	**(0.00)**	**(0.00)**	**(0.00)**	**0.00**	**(0.00)**	**0.00**	**(0.00)**	**(0.00)**
Increase/(Decrease) in Short-Term Debt	-	-	4,852,738,302,050.17	(33,368,391,159.78)	(1,629,153,400,527.17)	(2,316,956,879,266.10)	24,642,940,229.29	19,739,719,792.87	13,632,501,951.32	7,326,576,992.11	1,072,890,924.82
Increase/(Decrease) in Current Portion of Long-Term Debt	-	2,224,603,854.25	4,451,032,102.30	471,299,898.53	504,573,671.37	540,196,572.57	578,334,450.59	619,164,862.80	662,877,902.12	709,677,082.01	-
Increase/(Decrease) in Long-Term Debt	9,588,000,000.00	19,010,763,163.44	52,820,246,557.59	(7,146,935,855.08)	(7,651,509,526.45)	(8,191,706,099.02)	(8,770,040,549.61)	(9,389,205,412.41)	(10,052,083,314.53)	(10,761,760,396.53)	(10,761,760,396.53)
Increase/(Decrease) in Equity Financing	9,400,000,000.00	10,755,347,272.25	38,173,949,310.24	(58,329,296,582.49)	-	-	-	-	-	-	-
Total Cash Flow from Financing Activities	**18,988,000,000.00**	**31,990,714,289.94**	**4,948,183,530,020.29**	**(98,373,323,698.81)**	**(1,636,300,336,382.25)**	**(2,324,608,388,792.55)**	**16,451,234,130.27**	**10,969,679,243.26**	**4,243,296,538.91**	**(2,725,506,322.42)**	**(9,688,869,471.71)**
Net Cash Flow	-	7,910,694,544.50	4,537,938,861,152.88	(373,504,691,408.97)	(1,804,624,745,709.61)	(2,342,498,743,737.56)	3,367,364,963.69	3,815,096,805.21	4,322,305,139.78	4,896,888,953.68	5,547,796,719.25
Beginning Cash	-	-	7,910,694,544.50	4,545,849,555,697.38	4,172,344,864,288.41	2,367,720,118,578.80	25,221,374,841.24	28,588,739,804.92	32,403,836,610.13	36,726,141,749.91	41,623,030,703.59
Ending Cash	-	7,910,694,544.50	4,545,849,555,697.38	4,172,344,864,288.41	2,367,720,118,578.80	25,221,374,841.24	28,588,739,804.92	32,403,836,610.13	36,726,141,749.91	41,623,030,703.59	47,170,827,422.84

4.7.4.5 Free Cashflow to the Firm Projection

Table 4.19 Free Cash Flow to the Firm

FREE CASH FLOW TO THE FIRM											
Earnings Before Interest and Taxes (EBIT)	-	-	26,466,009,063.90	15,434,618,166.12	22,721,836,753.75	30,327,316,507.53	38,381,018,094.32	47,018,501,401.25	56,383,225,090.91	66,628,943,226.18	77,922,241,898.08
Tax of EBIT	-	-	5,822,521,994.06	3,395,615,996.55	4,998,804,085.83	6,672,009,631.66	8,443,823,980.75	10,344,070,308.28	12,404,309,520.00	14,658,367,509.76	17,142,893,217.58
Net Operating Profit After Tax	-	-	**20,643,487,069.84**	**12,039,002,169.57**	**17,723,032,667.93**	**23,655,306,875.87**	**29,937,194,113.57**	**36,674,431,092.98**	**43,978,915,570.91**	**51,970,575,716.42**	**60,779,348,680.51**
Depreciation & Amortization	-	-	3,897,469,299.39	19,179,403,939.02	16,713,723,413.82	14,576,800,291.98	12,724,800,253.05	11,119,733,552.64	9,728,675,745.62	8,523,092,312.87	7,478,253,337.82
Operating Cash Flow	-	-	**24,540,956,369.24**	**31,218,406,108.59**	**34,436,756,081.75**	**38,232,107,167.85**	**42,661,994,366.62**	**47,794,164,645.62**	**53,707,591,316.53**	**60,493,668,029.29**	**68,257,602,018.33**
Changes in Current Asset	-	-	38,349,640,566.97	5,109,341,080.89	5,788,369,098.58	6,557,589,191.04	7,428,979,645.47	8,416,109,440.24	9,534,349,959.66	10,801,113,257.06	12,236,124,793.01
Changes in Account Payable and Accuals	-	-	3,728,251,477.97	478,764,281.27	541,858,076.74	613,316,419.03	694,249,718.09	785,915,829.82	889,739,680.11	1,007,335,349.70	1,140,531,354.52
Net Current Asset Investment	-	-	34,621,389,089.00	4,630,576,799.62	5,246,511,021.85	5,944,272,772.01	6,734,729,927.37	7,630,193,610.42	8,644,610,279.55	9,793,777,907.37	11,095,593,438.49
Net Fixed Asset Investment	18,988,000,000.00	24,080,019,745.45	117,825,179,096.62	-	-	-	-	-	-	-	-
Free Cash Flow to the Firm	**(18,988,000,000.00)**	**(24,080,019,745.45)**	**(127,905,611,816.38)**	**26,587,829,308.97**	**29,190,245,059.90**	**32,287,834,395.84**	**35,927,264,439.25**	**40,163,971,035.20**	**45,062,981,036.98**	**50,699,890,121.93**	**57,162,008,579.84**
Terminal Cash Flow											**1,008,895,971,827.36**
Total Cash Flow	**(18,988,000,000.00)**	**(24,080,019,745.45)**	**(127,905,611,816.38)**	**26,587,829,308.97**	**29,190,245,059.90**	**32,287,834,395.84**	**35,927,264,439.25**	**40,163,971,035.20**	**45,062,981,036.98**	**50,699,890,121.93**	**1,066,057,980,407.19**

Table 4.20 Free Cash Flow to the Equity

FREE CASH FLOW TO EQUITY												
Earnings Available for Common Stockholders	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation & Amortization	-	-	3,897,469,299.39	-	16,713,723,413.82	14,576,800,291.98	12,724,800,253.05	11,119,733,552.64	9,728,675,745.62	8,523,092,312.87	7,478,253,337.82	
Operating Cash Flow	-	-	**3,897,469,299.39**	-	**16,713,723,413.82**	**14,576,800,291.98**	**12,724,800,253.05**	**11,119,733,552.64**	**9,728,675,745.62**	**8,523,092,312.87**	**7,478,253,337.82**	
Changes in Current Asset	-	-	38,349,640,566.97	5,109,341,080.89	5,788,369,098.58	6,557,589,191.04	7,428,979,645.47	8,416,109,440.24	9,534,349,959.66	10,801,113,257.06	12,236,124,793.01	
Changes in Account Payable and Accuals	-	-	3,728,251,477.97	478,764,281.27	541,858,076.74	613,316,419.03	694,249,718.09	785,915,829.82	889,739,680.11	1,007,335,349.70	1,140,531,354.52	
Net Current Asset Investment	-	-	34,621,389,089.00	4,630,576,799.62	5,246,511,021.85	5,944,272,772.01	6,734,729,927.37	7,630,193,610.42	8,644,610,279.55	9,793,777,907.37	11,095,593,438.49	
Net Fixed Asset Investment	18,988,000,000.00	24,080,019,745.45	117,825,179,096.62	-	-	-	-	-	-	-	-	
Changes in Debt and Preferred Stock	-	49,834,130,181.13	4,991,428,590,431.08	34,228,046,749.62	(1,569,679,772,042.76)	(2,266,179,530,552.08)	66,110,051,821.14	51,239,291,521.72	34,460,825,502.84	16,730,262,244.98	(994,861,300.84)	
Free Cash Flow to Equity	**(18,988,000,000.00)**	**25,754,110,435.69**	**4,842,879,491,544.85**	**29,597,469,950.00**	**(1,558,212,559,650.78)**	**(2,257,547,003,032.11)**	**72,100,122,146.81**	**54,728,831,463.94**	**35,544,890,968.91**	**15,459,576,650.48**	**(4,612,201,401.51)**	
Terminal Cash Flow												**(51,524,199,543.47)**
Total Cash Flow	**(18,988,000,000.00)**	**25,754,110,435.69**	**4,842,879,491,544.85**	**29,597,469,950.00**	**(1,558,212,559,650.78)**	**(2,257,547,003,032.11)**	**72,100,122,146.81**	**54,728,831,463.94**	**35,544,890,968.91**	**15,459,576,650.48**	**(56,136,400,944.98)**	

4.7.4.6 Accumulated Cashflow and Present Value Cashflow Projection

Table 4.21 Accumulated Free Cash Flow to the Firm and Present Value of Cash Projection

	0	1	2	3	4	5	6	7	8	9	10
FREE CASH FLOW TO THE FIRM											
Cash Flow	(18,988,000,000.00)	(24,080,019,745.45)	(127,905,611,816.38)	26,587,829,308.97	29,190,245,059.90	32,287,834,395.84	35,927,264,439.25	40,163,971,035.20	45,062,981,036.98	50,699,890,121.93	1,066,057,980,407.19
Accumulated Cash Flow	(18,988,000,000.00)	(43,068,019,745.45)	(170,973,631,561.83)	(144,385,802,252.85)	(115,195,557,192.95)	(82,907,722,797.12)	(46,980,458,357.87)	(6,816,487,322.68)	38,246,493,714.30	88,946,383,836.23	1,155,004,364,243.42
Cash Flow (in Billion)	(18.99)	(24.08)	(127.91)	26.59	29.19	32.29	35.93	40.16	45.06	50.70	1,066.06
WACC	8.82%										
PV of Cash Flow	(18,988,000,000.00)	(22,127,410,192.00)	(108,003,317,444.83)	20,630,232,676.77	20,812,906,502.55	21,154,738,310.28	21,630,504,005.96	22,220,451,625.09	22,909,198,885.19	23,684,856,110.02	457,634,024,463.92
Accumulated PV of Cash Flow	(18,988,000,000.00)	(41,115,410,192.00)	(149,118,727,636.83)	(128,488,494,960.06)	(107,675,588,457.51)	(86,520,850,147.23)	(64,890,346,141.27)	(42,669,894,516.18)	(19,760,695,631.00)	3,924,160,479.02	461,558,184,942.94

Table 4.22 Accumulated Free Cash Flow to the Equity and Present Value of Cash Flow Projection

FREE CASH FLOW TO EQUITY											
Cash Flow	(18,988,000,000.00)	25,754,110,435.69	4,842,879,491,544.85	29,597,469,950.00	(1,558,212,559,650.78)	(2,257,547,003,032.11)	72,100,122,146.81	54,728,831,463.94	35,544,890,968.91	15,459,576,650.48	(56,136,400,944.98)
Accumulated Cash Flow	(18,988,000,000.00)	6,766,110,435.69	4,849,645,601,980.54	4,879,243,071,930.54	3,321,030,512,279.76	1,063,483,509,247.65	1,135,583,631,394.47	1,190,312,462,858.41	1,225,857,353,827.32	1,241,316,930,477.80	1,185,180,529,532.82
Cash Flow (in Billion)	(18.99)	25.75	4,842.88	29.60	(1,558.21)	(2,257.55)	72.10	54.73	35.54	15.46	(56.14)
Cost of Equity	12.2%										
PV of Cash Flow	(18,988,000,000.00)	22,952,047,147.28	3,846,390,822,441.60	20,949,767,589.55	(982,938,159,149.50)	(1,269,144,785,572.92)	36,123,119,071.39	24,436,572,506.76	14,144,127,937.44	5,482,409,359.01	(17,741,621,199.22)
Accumulated PV of Cash Flow	(18,988,000,000.00)	3,964,047,147.28	3,850,354,869,588.88	3,871,304,637,178.43	2,888,366,478,028.93	1,619,221,692,456.01	1,655,344,811,527.39	1,679,781,384,034.16	1,693,925,511,971.60	1,699,407,921,330.61	1,681,666,300,131.39

4.8 Capital Budgeting Analysis

Based on the financial projections and the cost of capital calculations, below is the capital budgeting analysis result of PT CTI new project plan:

Table 4.23 Capital Budgeting Analysis for Free Cash Flow to the Firm

Parameter	Result	Decision Criteria	Decision
Payback Period	7.15	Payback period less than 10 year	Accepted
Discounted Payback Period	8.83	Payback period less than 10 year	Accepted
Net Present Value	461,558,184,942.94	NPV > 0	Accepted
Profitability Index	25.31	PI > 1	Accepted
IRR	25.30%	IRR > WACC	Accepted

Interpretation for FCFF:

- **Payback Period**: The payback period of 7.15 years indicates that the project will recover its initial investment within this timeframe. Since this period is shorter than the 10-year threshold, the project is deemed acceptable based on this criterion.
- **Discounted Payback Period**: The discounted payback period considers the time value of money, meaning it discounts future cash flows to their present value. The 8.83-year period meets the decision criterion of being less than 10 years, so the project is acceptable under this measure as well.
- **Net Present Value (NPV)**: A positive NPV of IDR 461.56 billion indicates that the project is expected to generate significantly more cash inflows than outflows, adjusted for the time value of money. This suggests that the project will add substantial value to the firm, making it a favorable investment.
- **Profitability Index (PI)**: A profitability index of 25.31 means that for every IDR 1 invested, the project is expected to generate IDR 25.31 in returns. Since this is much greater than 1, it indicates that the project is highly profitable and should be undertaken.
- **Internal Rate of Return (IRR)**: The IRR of 25.30% is significantly higher than the WACC of 8.82%. This means the project is expected to generate a return that far exceeds the company's cost of capital. Therefore, the project is highly profitable and financially attractive. The large margin between the IRR and the WACC suggests that the project not only covers the cost of capital but also offers a substantial return on investment, reinforcing the decision to accept and pursue the project.

The capital budgeting analysis shows that the project meets or exceeds all key financial criteria, indicating it is a highly attractive investment. The project has a relatively quick payback period, a very high NPV, a strong profitability index, and an IRR well above the WACC. Based on these metrics, the project should be accepted and pursued, as it is expected to generate substantial value for the firm.

Table 4.24 Capital Budgeting Analysis for Free Cash Flow to the Equity

Parameter	Result	Decision Criteria	Decision
Payback Period	0.74	Payback period less than 10 year	Accepted
Discounted Payback Period	0.83	Payback period less than 10 year	Accepted
Net Present Value	1,681,666,300,131.39	NPV > 0	Accepted
Profitability Index	89.56	PI > 1	Accepted
IRR	18.56%	IRR > Cost of Equity	Accepted

Interpretation for FCFE:

- **Payback Period**: The payback period of 0.74 years is remarkably short, indicating that the project will recover its initial equity investment in less than a year. Since this is well within the 10-year threshold, the project is considered highly favorable based on this criterion.
- **Discounted Payback Period**: Even when accounting for the time value of money, the discounted payback period is only 0.83 years. This rapid recovery time supports the decision to accept the project, as it shows that the equity investment is recouped quickly, even when discounted.
- **Net Present Value (NPV)**: The NPV of over IDR 1.68 trillion indicates that the project is expected to generate substantial value for equity holders. A positive NPV means the project will produce more cash inflows than outflows, adjusted for the cost of equity, making it a very attractive investment.
- **Profitability Index (PI)**: A profitability index of 89.56 is extremely high, meaning that for every IDR 1 of equity invested, the project is expected to return IDR 89.56. This indicates a highly profitable project, justifying the decision to proceed with the investment.
- **Internal Rate of Return (IRR)**: The IRR of 18.56% significantly exceeds the Cost of Equity of 12.21%. This means the project is expected to generate returns well above the required return for equity holders, making it a financially sound investment.

The analysis of FCFF and FCFE reveals that FCFE recovers faster than FCFF. This difference is attributed to the use of debt, which increases returns to equity holders because the cost of debt is typically lower than the returns generated by the investment. This leverage effect results in higher NPV, PI, and IRR for FCFE. Additionally, interest payments on debt are tax-deductible, reducing taxable income and effectively increasing after-tax returns, benefiting equity holders. Overall, both FCFF and FCFE analyses strongly support proceeding with the project, with a notable advantage for equity holders due to the positive impact of debt financing.

4.9 Financial Risk Analysis

4.9.1 Sensitivity Analysis

This risk analysis uses sensitivity analysis to assess how changes in key input variables can affect the project's Net Present Value (NPV). The sensitivity analysis highlights how variations in these inputs influence the project's financial outcomes, thereby identifying the most critical risk factors. This analysis will consider two scenarios: a 5% change and a 10% change in each key variable.

Table 4.25 Sensitivity Analysis with 10% Swing

	Percentage +10% Swing	**Percentage -10% Swing**
Short-Term Debt Interest Rate	0.00%	0.00%
ID Inflation Rate	1.96%	-1.93%
Long-Term Debt Interest Rate	-2.48%	14.23%

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Swing in Quantity Sold for medical gloves	12.46%	-12.46%
Swing in Price per Unit for medical gloves	12.46%	-12.46%
COGS for medical gloves	-37.62%	37.62%

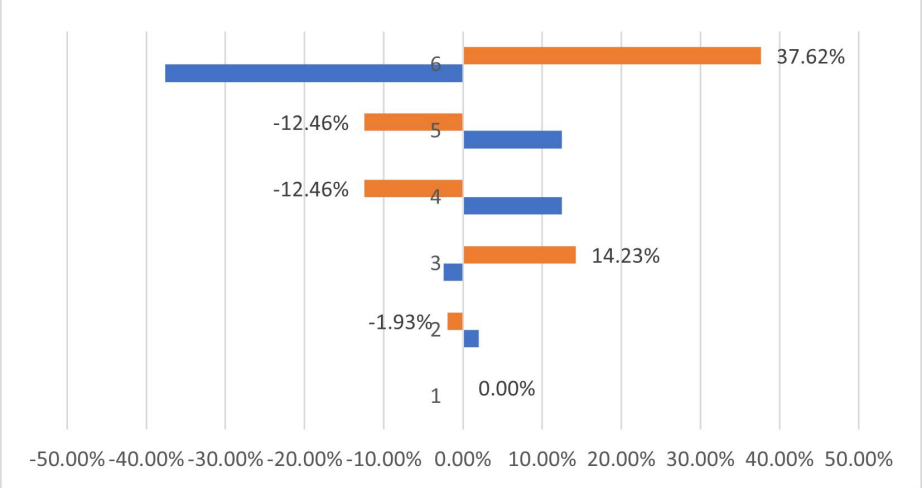

Figure 4.6 Sensitivity 10% Swing Bar Chart

Table 4.26 Sensitivity Analysis with 5% Swing

	Percentage +5% Swing	**Percentage -5% Swing**
Short-Term Debt Interest Rate	0.00%	0.00%
ID Inflation Rate	0.98%	-0.97%
Long-Term Debt Interest Rate	1.37%	9.70%
Swing in Quantity Sold for medical gloves	6.23%	-6.23%
Swing in Price per Unit for medical gloves	6.23%	-6.23%
COGS for medical gloves	-18.81%	18.81%

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(2024), 3 (1): 833–867

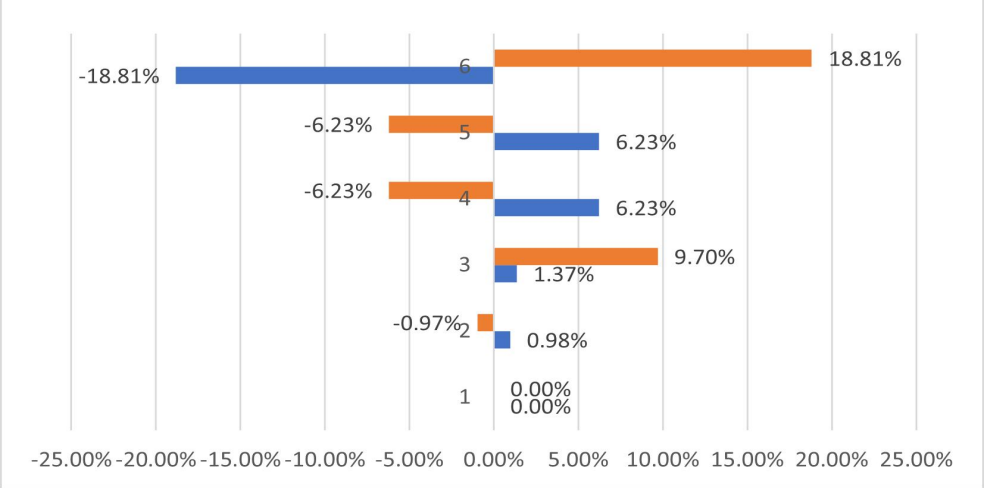

Figure 4.7 Sensitivity 5% Swing Bar Chart

Key Insight and the impact on NPV:

1. **Short-Term Debt Interest Rate**
   No impact on NPV from changes in short-term debt interest rate.
2. **ID Inflation Rate**
   Positive inflation rate swing increases NPV, while negative swing decreases it. The sensitivity is relatively high, suggesting that changes in inflation can significantly affect the NPV.
3. **Long-Term Debt Interest Rate**
   An increase in long-term debt interest rate decreases NPV, whereas a decrease increases NPV. The effect is substantial, indicating that NPV is sensitive to changes in long-term debt interest rates.
4. **Swing in Quantity Sold for Medical Glove**
   An increase in quantity sold boosts NPV, and a decrease in quantity sold reduces NPV. This indicates a strong positive correlation between quantity sold and NPV.
5. **Swing in Price per Unit for Medical glove**
   Increasing the price per unit increases NPV, while decreasing it reduces NPV. The sensitivity is similar to quantity sold, showing that changes in price significantly impact NPV.
6. **COGS for Medical Gloves**
   Changes in COGS still significantly impact NPV.

Summary

- **Long-Term Debt Interest Rate** and **COGS for Medical Gloves** have the most substantial effects on NPV, particularly with larger swings.
- **Quantity Sold** and **Price per Unit** for Medical gloves also have significant impacts, showing a strong sensitivity to changes.
- **Inflation Rate** has a notable impact, but the effect is less severe compared to the variables mentioned above.
- **Short-Term Debt Interest Rate** does not affect NPV in the sensitivity analysis.

This sensitivity analysis helps to understand which variables most affect the NPV and how robust the investment is to changes in these factors.

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This study evaluates the financial feasibility of CTI's project to establish a medical glove production facility in Indonesia. It covers product and market analysis, internal and external company assessments, financial feasibility, and sensitivity analysis.

CTI plans to produce nitrile surgical gloves for hospitals, clinics, and healthcare providers, focusing initially on the Indonesian market and then expanding to the Asia-Pacific region. External analysis shows a supportive environment due to rising healthcare needs and infection control awareness, despite competition from established manufacturers. The TOWS analysis offers strategic recommendations for CTI to leverage its technological expertise and seize market opportunities.

The financial feasibility analysis, including initial investment, cost of capital, sales, income, and cash flow projections, indicates high feasibility and potential profitability. The project requires an initial investment of IDR 117 billion, with operations set to begin in early 2028. The specific financial metrics such as PP, NPV, IRR, and PI showed that the project is deemed financially viable, with equity investor backing reflecting strong market confidence.

However, the project faces financial risks related to long-term debt interest rate and COGS following with the quantity sold and the price per unit. Meeting GMP standards with high-quality materials could affect cost structures, highlighting the need for continuous monitoring and adjustment of production volumes, pricing strategies, and cost management.

In conclusion, the study finds the CTI medical glove production facility project financially feasible. Success depends on proactive management of product quality, pricing, and costs, along with ongoing market assessment and alignment with government policies like TKDN. This approach could establish CTI as a leading player in the medical device industry in Indonesia and the Asia-Pacific region, despite inherent risks.

5.2 Recommendation

Based on the financial feasibility study, CTI's medical glove production project is recommended for implementation. To ensure success and mitigate financial risks, the following strategic actions are advised:

1. Prioritize strategic pricing management for medical gloves, as this factor has the highest contribution to NPV sensitivity. This could involve:
   - Implementing a dynamic pricing strategy that balances competitiveness with profitability.
   - Regularly monitoring market prices and adjusting strategies to maintain optimal pricing.
   - Developing a tiered pricing structure for different market segments or product qualities.
2. Closely monitor and manage long-term debt and interest rates, as these significantly impact profitability.
3. Develop a comprehensive market penetration and expansion strategy, including:

- Leveraging the TKDN policy to secure government contracts and establish a strong foothold in the domestic market.
- Developing a phased expansion plan to gradually increase market share and production capacity.
- Exploring export opportunities in the Asia-Pacific region to diversify revenue streams.

4. Develop a detailed risk management plan that addresses potential risks not fully covered in this study, such as:
   - Supply chain disruptions (e.g., raw material shortages)
   - Competitive pressures and market share challenges
   - Regulatory changes and compliance issues

By implementing these recommendations, PT Crown Teknologi Indonesia can strengthen its position in the medical gloves market, optimize its financial performance, and effectively manage potential risks associated with this new venture.

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