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Financial Feasibility Of Project Limestone Kendari

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Abstract

This internship report provides an overview of new projects at PT Z, focusing on the Business Development division, aimed at diversifying the company into other mining ventures. The decision to intern here was significantly influenced by the job description, which aligns perfectly with the author's major in finance, particularly involving the calculation of financial feasibility for upcoming projects. The objectives were to provide an overview of feasibility studies, including their purpose, key components, and methodologies; identify and analyze the financial parameters commonly used to determine the feasibility of projects; and evaluate the financial feasibility of the limestone project in Kendari, Indonesia, by applying financial parameters such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period. The research employed quantitative methods, utilizing both primary and secondary data. The feasibility study for PT Z's limestone mining project in Kendari confirmed the project's strong potential due to favorable market conditions and excellent limestone quality. Financial feasibility, assessed using key metrics, showed a positive NPV, an IRR significantly above the cost of capital, and a short payback period, all of which affirm the project's economic viability. Additionally, the capital cost, essential for supporting business growth and objectives, was accurately estimated and managed. These factors collectively demonstrate that the limestone project is financially feasible and poised for success, providing promising returns and contributing significantly to PT Z's strategic diversification.

Keywords: Mining Project; Financial Feasibility; NPV; IRR; Payback Period.

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INTRODUCTION

PT. Z is undertaking Project Limestone Kendari PT. Z is undertaking Project Limestone Kendari in Southeast Sulawesi to capitalize on the region's abundant limestone reserves. This project serves as a strategic move to diversify PT. Z's business portfolio by leveraging Kendari's advantageous location and natural resources. The limestone is intended to supply high-quality raw material for various industrial applications, both domestic and international. The financial feasibility analysis is crucial in evaluating the alignment of this project with PT. Z's long-term business goals, ensuring the efficient use of resources while mitigating potential risks.

The decision to establish operations in Kendari is supported by its economic advantages and natural resource potential. The mining sector has historically contributed significantly to Kendari's Gross Domestic Product (GDP) and employment, forming the backbone of the local economy. Through this project, PT. Z aims to foster sustainable economic growth while adhering to environmentally responsible mining practices. The project seeks to enhance Kendari's regional economy by creating job opportunities, improving infrastructure, and supporting industrial development.

However, the economic feasibility of this initiative depends on various financial factors such as market demand, production costs, and revenue forecasts. This underscores the importance of a comprehensive financial feasibility study to assess the project's viability, enabling informed decision-making and strategic investments. The author's internship at PT. Z provided valuable practical experience in contributing to this evaluation process by analyzing financial parameters and considering sustainability goals.

This study aims to explore the framework of project feasibility analysis and its financial aspects. Specifically, it seeks to evaluate the financial viability of PT. Z's limestone project in Kendari by examining market conditions, cost structures, and revenue projections. The study intends to determine whether the project is feasible and can effectively balance economic, environmental, and social objectives.

Feasibility Study

Feasibility studies evaluate whether a project is viable and profitable by analyzing market, technical, financial, and social aspects. These studies play a critical role in investment decisions, especially for projects requiring substantial funds and long-term commitment. By identifying success and risk factors, feasibility studies ensure optimal resource allocation and reduce financial risks.

Key Concepts

A feasibility study is a systematic process to assess a project's practicality and success potential. It examines critical elements like financial viability, technical feasibility, and operational aspects. Examples include studies on renewable energy projects and innovative technologies, highlighting the importance of informed decision-making for long-term project success.

Aspects Influencing Feasibility

1. **Human Resources (HR):** Workforce availability and skills.
2. **Operations:** Efficient strategies, e.g., gamification in education.
3. **Marketing:** Effective promotion through tools like social media.
4. **Finance:** Adequate financial planning ensures funding and execution.

Financial Feasibility

This aspect focuses on evaluating costs, revenues, and cash flows using metrics like:

- **Net Present Value (NPV):** Difference between cash inflows and outflows.
- **Internal Rate of Return (IRR):** Discount rate at which NPV equals zero.
- **Payback Period (PBP):** Time required to recover initial investment.

Economic Feasibility

Two evaluation methods:

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1. **Conventional:** Payback Period (PBP) and Average Rate of Return (ARR).
2. **Discounted Cash Flow:** NPV, IRR, and Profitability Index (PI).

IMPLEMENTATION METHOD

Internships at PT Z, namely in the business development department, emphasize practical experience through fieldwork assignments as a priority. The interns actively engaged in a variety of tasks to assess the feasibility of the Limestone Kendari project. This engagement involved undertaking extensive research and financial analysis, gathering relevant data, assessing expenses, projecting income, and determining investment needs. The goal was to develop comprehensive financial models and forecasts, which were essential for evaluating the project's financial viability.

The internship, spanning from August 14, 2023, to February 23, 2024, had a clearly defined schedule and location to maximize both learning and contribution. Interns were mandated to work in the PT Z headquarters located in the Kirana Three Building (Bella Terra) Kelapa Gading, from Monday to Friday, between the hours of 9:00 am and 5:30 pm. The entire process, commencing with registration and culminating in report submission, was meticulously recorded to ensure clarity and structure. The primary goal was to create a comprehensive financial feasibility evaluation for the Limestone Kendari project, with a particular emphasis on financial analysis. This excluded marketing activities to allow interns to concentrate only on financial analysis.

The interns conducted comprehensive research and analysis to evaluate the financial feasibility of the project, utilizing both primary and secondary data. The interns and the limestone project team in Kendari gathered primary data directly, specifically emphasizing the performance of financial feasibility calculations. The secondary data consisted of financial reports, cash flow statements, and other company documents provided by PT Z. The methodology involved employing quantitative research methodologies to integrate field data with theoretical concepts in order to establish a comprehensive problem-solving approach. This systematic approach ensured that interns not only gained practical experience but also made significant contributions to the project's financial assessment.

RESULT AND DISCUSSION

Company Profile

PT Z, a subsidiary of the Z Group, was established in 2015 with a firm commitment to environmental sustainability and the production of high-quality minerals, rocks, and metals. The company's major goal is to provide sustainable, high-quality coal and natural resources, while upholding a strong dedication to integrity, promoting creativity, and fostering cooperation. PT Z has diversified its operations to include the extraction and refining of nickel since its inception, with a primary focus on extending its service offerings while maintaining a strong dedication to environmental preservation. The company's portfolio includes coal, nickel, limestone, andesite, and silica sand. These goods undergo rigorous quality control processes to ensure the highest level of quality for consumers.

The corporation demonstrates its commitment to environmental conservation by operating fully compliant mines that promote biodiversity and protect human rights. PT Z conducts thorough quality inspections to guarantee that all supplies are ethically obtained and comply with the most stringent

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requirements of quality and safety. Customers rely on the company for timely deliveries and a strong commitment to excellence. The organization is guided by the philosophy of continual improvement, which inspires it to better its operations, minimize its environmental footprint, and adjust to evolving client requirements. This emphasizes the significant value placed on environmental stewardship in the company's activities. Internship Role

The internship program was carried out at PT.Z within the Business Development Unit. This unit is comprised of several sub-units, each responsible for distinct roles. The Strategy & Business Development Sub-Unit focuses on identifying growth opportunities and creating strategic plans. The Program Management Office Sub-Unit oversees project timelines, ensures compliance with standards, and manages resources efficiently. Additionally, the Information & Technology Sub-Unit is in charge of IT infrastructure, system management, and technological support. During this internship, the author was assigned to the Business Development Sub-Unit.

1. Overview of Feasibility Study

This feasibility study evaluates the limestone mining project proposed by PT Z in Kendari, Southeast Sulawesi. Covering 84.5 hectares across Desa Wawoluri and Desa Kokapi, the study assesses technical, economic, legal, operational, and scheduling aspects to ensure informed decision-making and efficient resource allocation.

A. Project Location and Administrative Area

a) Desa Kokapi: 75.4 hectares (89% of the project area)

b) Desa Wawoluri: 9.1 hectares (11% of the project area)

B. Market Analysis

a. Smelter Markets

a) Morowali: 100 km north, accessible by sea, significant market potential.

b) Morosi: 10 km west, accessible by land, strategic for local supply.

c) Local producers supply 30% of demand, creating an opportunity to increase domestic supply.

b. Aggregate Markets

Kendari: 20 km south, accessible by sea and land, serving construction and smelter needs. Product Quality (Laboratory Tested)

Parameter		Unit	Test Result	Method
Index Properties	Natural (Air Dried) Density	gr/cm³	1.607	SNI 03 - 2437 - 1991
	Density	gr/cm³	2.597	
	Natural (Air Dried) Water Content	%	0.340	
	Porosity	%	0.897	
	Apparent Specific Gravity	-	2.639	
	True Specific Gravity	-	2.663	
	Void Ratio	-	0.009	
Unconfined Compression Strength		kg/cm²	908	SNI 03 - 2825 - 1992
Los Angeles Abrasion (Percentage of Aggregate Abrasion Value)		%	23.292	SNI 03 - 2417 - 1991
Specific Gravity & Absorption	Bulk Specific Gravity (dry condition)	-	2.639	SNI 03 - 1969 - 1990
	Apparent Specific Gravity	-	2.663	
	Bulk Specific Gravity (SSD Condition)	-	2.648	
	Percentage of Water Absorption	%	0.340	

Image 2. Sample Mark

a. Index Properties:

a) Natural Density: 1.607 gr/cm³

b) Bulk Density: 2.597 gr/cm³

c) Water Content: 0.340%

d) Porosity: 0.897%

e) Specific Gravity: 2.639 (apparent), 2.663 (true)

f) Void Ratio: 0.009

b. Unconfined Compression Strength:

Strength: 908 kg/cm²

c. Los Angeles Abrasion Test: Abrasion Value: 23.292%

d. Specific Gravity and Absorption:

a) Dry Condition: 2.639

b) Apparent: 2.663

c) SSD Condition: 2.648

d) Water Absorption: 0.340%

The limestone exhibits high density, low porosity, significant compressive strength, and moderate abrasion resistance, making it suitable for industrial applications such as construction aggregates and smelter

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operations. Its low water absorption rate further enhances its durability and suitability for demanding environments.

2. Financial Parameters used to Determine the Feasibility of a Project

Financial parameters are essential f orevaluating the feasibility of a project, offeringquantifiable metrics to determine its potentialprofitability and viability. The primary financialparameters used in feasibility studies are NetPresent Value (NPV), Internal Rate of Return(IRR), and Payback Period.

Net Present Value (NPV)

NPV calculates the present value of all cash inflows and outflows associated with a project, discounted at the project's cost of capital.

a. Criteria for a Good Project:

Positive NPV: Indicates that the project's returns exceed its costs, adding value to the firm.

Higher NPV Relative to Alternatives: When comparing projects, the one with the higher NPV should be preferred for its greater value generation.

A. Internal Rate of Return (IRR)

IRR is the discount rate that makes the NPV of a project zero, representing the project's expected annual rate of return.

a. Criteria for a Good Project:

IRR Greater Than the Cost of Capital: Ensures the project generates sufficient returns to cover its costs.

Higher IRR Relative to Alternatives: Indicates a higher potential return on investment, making it preferable when comparing multiple projects.

B. Payback Period

The payback period is the time required for a project to recover its initial investment from its net cash inflows.

a. Criteria for a Good Project:

Short Payback Period: Indicates quick recovery of the investment, reducing risk and improving liquidity.

Acceptable Payback Period Relative to Industry Norms: Should align with industry standards and the firm's risk tolerance.

3. Financial Feasibility of the Limestone Project Kendari

a. Net Present Value Method

A project is deemed acceptable if its NPV value exceeds zero (NPV > 0). For PT. Z, the NPV calculation yields:

NPV = Total Present Value - Initial InvestmentNPV = Rp184,958,519,737 - Rp43,656,000,000 NPV = Rp141,302,519,737

From the above calculation, it is evident that the NPV of Rp141,302,519,737 is significantly greater than zero. This positive NPV indicates that the present value of the project's expected cash flows exceeds the initial investment by a substantial margin. This surplus suggests that the project is expected to generate considerable economic value over its operational life.

The high NPV not only signifies that the projectis financially viable but also suggests that it offers a robust return on investment. Investors and stakeholders can be confident that the project will yield profits and contribute positively to the company's financial health. The positive NPV acts as a strong indicator that the project will likely achieve its financial goals and deliver significant value to its stakeholders.

b. Internal Rate of Return

The Internal Rate of Return (IRR) for this project is 53%, indicating an expected annual return on investment of 53%. This high IRR suggests substantial potential profitability.

The Internal Rate of Return (IRR) analysis for PT Z limestone mining project underscores its potential for high profitability. An IRR of 53% indicates that the

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investment is expected to generate a substantial annual return, far exceeding typical investment benchmarks and the company's cost of capital. This high IRR highlights the project's strong financial viability, making it a highly attractive and promising investment opportunity. The robust return rate not only reassures investors of the project's profitability but also supports informed decision-making and strategicplanning, ensuring the project's success and long-term financial benefits for PT Z and its stakeholders.

c. Payback Period

Years	Free Cash Flow	Payback Period
0	-52.820.000.000	
1	26.491.387.972	
2	26.586.817.871	1 Year 11 Month
3	28.146.519.264	
4	29.784.205.727	
5	31.503.776.514	
6	33.309.325.839	
7	35.205.152.631	
8	37.195.770.763	
9	39.285.919.801	
10	41.480.576.291	

Image 3. Payback Period

The payback period of 1 year and 11 months reflects the time required for the investment to recoup its initial cost through generated cash flows. This metric is valuable for assessing investment liquidity and risk, with a shorter payback period indicating quicker capital recovery. However, it does not consider cash flows beyond breakeven, necessitating additional metrics for a comprehensive evaluation of long-term profitability.

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4. Constraint During the Internship

Throughout the internship in the mining business, certain limitations were encountered during the execution phase:

a) As interns in the Business Development division, we faced a hurdle due to the restricted duration of the internship period. To meet both learning goals and project deadlines, it was necessary to effectively manage time and prioritize tasks in order to complete assigned obligations on time.

b) The presence of resources, such as data, tools, and persons, posed a limitation during the internship. Occasionally, there were restrictions on obtaining pertinent information for activities such as market research, financial analysis, and project appraisal. In this scenario, interns were expected to employ their creativity in making use of the resources at hand and to seek help from colleagues or supervisors if needed.

c) Interns faced limitations regarding their proficiency and understanding of business development concepts and processes. The absence of previous experience or knowledge of industry-specific procedures and tools required further training and help from mentors in order to contribute effectively to project duties and satisfy expectations.

CONCLUSION AND SUGGESTION

Conclusion

The comprehensive feasibility study conducted for PT Z limestone mining project in Kendari yielded the following key findings:

1. Based on the feasibility study conducted for PT Z limestone mining project in Kendari, the study provided a comprehensive evaluation covering technical, economic, legal, operational, and scheduling aspects, confirming the project's strong potential due to favorable market conditions and excellent limestone quality.

2. Financial feasibility was assessed using key metrics: Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period. The project displayed a positive NPV, indicating that returns exceed costs, an IRR above the cost of capital, and a short payback period, all of which affirm the project's economic viability. These factors collectively demonstrate that the limestone project is financially feasible and poised for success.

3. The capital cost of Rp45,820,000,000 represents the total financial investment required for acquiring assets and initiating projects, essential for supporting business growth and objectives. Accurate estimation and management of capital costs are crucial for effective financial planning and resource allocation. The NPV analysis indicates a positive value of Rp141,302,519,737, suggesting that the project is economically feasible. The IRR of 53% signifies the project's potential for high profitability, indicating a substantial return on investment. Additionally, the payback period of 1 year and 11 months demonstrates the time required for the investment to recoup its initial cost, providing insights into liquidity and risk.

Overall, considering these metrics collectively supports the conclusion that the project is economically viable and offers promising returns.

Suggestion

Based on the implementation of internship activities and existing backgrounds, there are several recommendations that can be proposed to enhance the future implementation of internship activities. Here are some suggestions that can be provided, among others:

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1. Long-Term Planning

While the payback period provides insights into short-term liquidity and risk, it's also crucial to consider the project's long-term profitability and sustainability. Develop a comprehensive long-term strategy that accounts for potential market changes, competitive dynamics, and evolving customer needs.

2. Continue Monitoring

While the project appears economically feasible based on the NPV, IRR, and payback period analysis, it's essential to continue monitoring its progress closely. Regular tracking of financial performance and project milestones will help ensure that the investment remains on track to achieve its expected returns.

3. Risk Management

Despite the favorable financial metrics, it's important to identify and mitigate potential risks that could impact the project's success. Conducting thorough risk assessments and implementing risk management strategies will help safeguard against unforeseen challenges.

4. Optimization

Look for opportunities to optimize resource allocation and operational efficiency throughout the project lifecycle. This could involve identifying cost-saving measures, streamlining processes, or leveraging technology to enhance productivity.

5. Flexibility

Remain flexible and adaptable to changing circumstances. In a dynamic business environment, it's essential to be prepared to adjust strategies and plans as needed to capitalize on new opportunities or address emerging challenges.

By implementing these suggestions, PT. Z can enhance the likelihood of achieving its objectives and maximizing the returns on its investment.

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