Available online at:
https://jurnal.integrasisainsmedia.co.id/index.php/JIMS
Journal Integration of Management Studies
Volume 2 Number 1, 2024: 118-128
DOI: 10.58229/jims.v2i1.178

Financial Feasibility Analysis of XYZ Company Market Expansion Plan to Kalimantan

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Abstract

XYZ Company, a B2B manufacturer of Songkok in Gresik, East Java, plans to expand its market by establishing a new distribution warehouse in Banjarmasin, Kalimantan. This strategy aims to leverage the growing demand for Songkok in Kalimantan, which has a significant Muslim population. The primary goal of this study is to evaluate the financial feasibility of purchasing versus renting the new warehouse for this investment plan. The financial feasibility analysis was conducted in multiple stages. Pro forma financial statements were constructed for both scenarios, incorporating historical data of the company's financial statements, industry benchmarks, and growth assumptions from management interviews. Free Cash Flow to the Firm (FCFF) and terminal cash flows were calculated using the Weighted Average Cost of Capital (WACC). Capital budgeting techniques were then used to evaluate financial feasibility, including Net Present Value (NPV), Internal Rate of Return (IRR), and Discounted Payback Period. Risk assessment was performed through sensitivity analysis and Monte Carlo simulation. Results indicate that the renting scenario, with an initial investment of IDR 242 million, has a higher NPV and IRR than the purchase scenario, which requires an initial investment of IDR 944 million. The renting scenario also offers a faster-discounted payback period of 2 years and one month, making it more feasible. Risk assessment shows moderate risk, with an 83% probability of achieving a positive NPV. The financial feasibility analysis recommends renting the new warehouse in Banjarmasin. This option provides a quicker payback period, higher NPV and IRR, and positive risk assessment results. Investing in this project will enhance XYZ Company's market presence in Kalimantan, cater to the growing demand for Songkok, and achieve sustainable growth and profitability.

Keywords: Capital Budgeting; Financial Feasibility; Market Expansion; Net Present Value; Risk Analysis

A. INTRODUCTION

With the world's second-largest Muslim population and the most robust economy among Organisation of Islamic Cooperation (OIC) countries, Indonesia holds significant potential for developing Islamic economics and finance. In 2021, the country had about 240 million Muslims, making up 86.9% of its population. According to KEKSI Report 2023, the Muslim fashion market is projected to have grown to an estimated $428 billion at a compound annual growth rate (CAGR) of 6.1% if it continues on its current trajectory of expansion. This growth is driven by the increasing demand for modest fashion goods, particularly Muslim clients who want to purchase clothing representing their cultural and religious views. There has been a recent trend towards incorporating modern fashion elements into traditional designs. Consumers, particularly younger men, seek peci or Songkok that reflect their religious beliefs and contemporary style. This trend has led to the emergence of innovative designs that combine traditional elements with modern aesthetics, catering to the evolving preferences of consumers (Lewis, 2015). TechSci Research states that incorporating modern fashion elements into traditional designs creates a combination that appeals to contemporary tastes while preserving cultural heritage. This approach meets consumer demands for unique clothing that reflects their cultural identity and modern lifestyle, broadening market reach by catering to a global audience interested in cultural diversity and fashion trends.

XYZ Company is a B2B manufacturing company that produces Songkok from Gresik, East Java. The artisans at this company, founded in 1988, are from Gresik, Lamongan, and Bojonegoro. The firm currently operates six warehouses in Gresik (serving Jawa Timur, Jawa Tengah, Bali, and Nusa Tenggara Barat market), Jakarta (serving Jakarta, Bogor, Depok, Tangerang, and Bekasi market), and Padang (serving Sumatra market). Following the COVID-19 pandemic, XYZ Company has experienced a financial uptrend, with a significant increase in orders leading to higher sales revenue. The company's ability to adapt and scale production has solidified its position as a prominent player in the songkok market. This strong past performance supports its

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expansion strategy, allowing it to take advantage of emerging opportunities and further strengthen its market positioning.

The company is considering expanding its market to Kalimantan by opening a new warehouse in Banjarmasin by early 2025. This expansion aims to tap into the growing Kalimantan market demand and leverage the region's large Muslim population. According to data from the Directorate General of Population and Civil Registration, 13.23 million Muslims live in Kalimantan, representing 78.29% of Borneo's total population. Specifically, South Kalimantan has the highest concentration of Muslims on the island, with 4.02 million Muslims making up 97.02% of the province's total population. The new branch will store a new brand of Songkok, featuring high-quality materials and a gold motif that is characteristic of XYZ Company. The company's management is considering purchasing or renting a new distribution warehouse. The initial investment for the purchase project is IDR 944 million, while the rent scenario requires IDR 242 million. By establishing a new warehouse in Banjarmasin, XYZ Company aims to strengthen its market presence in Kalimantan and cater to the specific needs of the local Muslim community. This expansion is expected to increase the company's market share. Moreover, the firm needs to decide which option between purchasing and leasing a warehouse is more advantageous based on capital budgeting analysis,

Given the substantial investment required for this project, XYZ Company must conduct a comprehensive financial feasibility study and risk assessment. This will help evaluate the project's financial feasibility and identify potential risks that could impact the investment. By conducting this analysis, the company can make informed decisions, avoid financial losses, and ensure that the returns are aligned with its expectations and strategic goals.

B. RESEARCH METHODS

The data collection process begins with identifying the key research problem and assessing the feasibility of opening a new warehouse for XYZ Company in Banjarmasin. The primary data for this research is gathered through in-depth interviews with the owner and the managing director of XYZ Company to gain insights into the company's objectives, challenges, and the detailed management plan for the expansion and identify internal and external factors affecting the company. Meanwhile, secondary data for this research is from XYZ Company's historical financial statements, including income statements and balance sheets from 2019 to 2023, industry benchmarks, historical market size and price information, inflation rates, and other relevant market data to provide insights into market trends and external factors. This information is then used to develop assumptions for projecting the income statement and balance sheet.

Stage 1 – Construct Pro Forma Financial Statement

Before conducting a feasibility analysis for the new warehouse in Banjarmasin, the assumptions are constructed based on a blend of historical data and current market conditions to ensure accuracy. For instance, growth rates in sales and expenses are derived from historical performance trends, reflecting the company's recent financial uptrend. Market conditions, such as regional demand for Songkok during peak seasons like Ramadan, also influence revenue projections. Cost assumptions for the new warehouse, including construction, maintenance, and operational expenses, are benchmarked against previous projects and adjusted for regional economic factors. Insights from industry experts and interviews with company representatives provide further validation, ensuring that the projections are realistic and based on empirical data and expert opinion.

Assumptions used for the rent scenario are similar to the purchase scenario; however, the initial investment will be lower since there is no expenditure to require assets needed for building the warehouse. Then, the pro forma income statement, balance sheet, and cash flow statement for purchase and warehouse scenarios are developed in parallel for the next ten years. Finally, the capital budgeting cash flow for the purchase and rent warehouse scenario is calculated to generate free cash flow for the firm.

Stage 2 - Calculate Weighted Average Cost of Capital (WACC)

The next step is calculating the Weighted Average Cost of Capital (WACC) for the XYZ Company investment project. Since the project is fully financed by equity, the calculation of WACC will only include the cost of equity and the weight of equity. The WACC is crucial for discounting future cash flows into the present to determine the project's Net Present Value (NPV). The cost of equity will be calculated using the Capital Asset Pricing Model (CAPM). As portrayed in the equation below:

$$\text{Cost of Equity} = \text{Risk-Free Rate} + \beta \times (\text{Market Rate of Return} - \text{Risk-Free Rate})$$

By providing a risk-adjusted discount rate, CAPM ensures that the Net Present Value (NPV) calculations for projects accurately reflect the actual cost of capital (Brealey, Myers, & Allen, 2011). This is crucial for assessing whether the projected returns from an investment, such as a new warehouse, are sufficient to justify the expenditure (Brealey, Myers, & Allen, 2011).

Stage 3 - Calculate Free Cash Flow to the Firm (FCFF) and Terminal Cash Flow
Stage 3A: Scenario 1 – Purchase Warehouse

After developing the pro forma income statement, balance sheet, and cash flow statement, the next step is calculating the Free Cash Flow to the Firm (FCFF). The FCFF is essential for analyzing the project's feasibility and consists of operating cash flow (OCF), capital expenditure, and changes in net working capital. The following process involves calculating the terminal cash flow. Terminal cash flow helps to assume that the business will grow at a constant rate indefinitely after the forecasted period. The terminal growth rate is obtained through secondary data sources; in this case, the average GDP growth rate of the modest fashion sector from the State of the Global Islamic Economy Report 2023 is 6.1%. Terminal cash flow is calculated at the end of the forecasted period and will be added to the FCFF at year 10, providing a comprehensive view of the project's financial feasibility over the long term. As portrayed in the Free Cash Flow to the Firm equation below:

$$\text{FCFF} = \text{EBIT} \times (1 - \text{Tax Rate}) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Working Capital}$$

Stage 3B: Scenario 2 – Rent Warehouse

Like Stage 3A, the next step is calculating the Free Cash Flow to the Firm (FCFF) for the rent scenario. However, this scenario will generate lower EBIT since the company must pay a significant Rent Expense every year. Once the FCFF is calculated, the terminal cash flow is calculated. The terminal growth rate will use the same value as Stage 3A.

Stage 4 – Feasibility Analysis using Capital Budgeting Techniques

In this stage, the financial feasibility of purchasing and renting a warehouse is evaluated using capital budgeting techniques such as the discounted payback period, net present value (NPV), and internal rate of return (IRR). The discounted payback period is determined by first calculating the present value of the cash inflows at the appropriate discount rate, followed by calculating the payback time using the present value of the cash inflows (Gitman, 2015). This technique is chosen because it accounts for the time value of money, providing a more accurate assessment of how quickly the investment can be recovered. NPV measures the difference between the present value of cash inflows and outflows, ensuring that the investment creates value for the shareholders. NPV offers a more realistic view of a project's profitability by discounting future cash flows to their present value (Brigham & Ehrhardt, 2007). When applied to all expected future cash flows, IRR is the discount rate that causes the present value to equal zero (Fabozzi, 2003). The value is determined using Excel's IRR function. This method is used since it is easily understood and communicated, is closely related to net present value (NPV), and frequently leads to the same decisions. Using these three techniques, the financial feasibility of purchasing and renting the warehouse can be evaluated comprehensively, considering both the time to recover the investment and the overall return.

Stage 5 – Decide Which Strategy Should be Implemented by the Firm

In this stage, the firm must decide whether to purchase or rent the warehouse by comparing the feasibility analysis results obtained in Stage 4. The analysis involves evaluating the financial performance of both scenarios based on key metrics: the discounted payback period, net present value (NPV), and internal rate of return (IRR). By examining the discounted payback period, the firm can determine which option allows it to recover its initial investment more quickly when considering the time value of money. The NPV analysis will analyze which scenario adds more value to the firm by calculating the difference between the present value of cash inflows and outflows. Additionally, the IRR provides the rate of return expected from each scenario, helping the firm understand the higher potential profitability of purchasing versus renting the warehouse. Following a thorough analysis of these financial parameters, the company can decide which course of action best suits its strategic objectives and shows greater financial success.

Stage 6 – Assess the Project Risk of the Selected Scenario

The last stage is assessing the project risk of the selected scenario since the project's risk and uncertainty also need to be considered. To start, sensitivity analysis will be performed to identify sensitive driver variables whose changes have a major impact on NPV. This process begins by selecting a range of potential factors, such as economic conditions and market demand, that are beyond the control of the company's management but can significantly influence the financial outcome of the project. Each variable will be changed for ±10% while keeping others constant to observe how changes in each variable impact the NPV. This method helps pinpoint the most sensitive variables, i.e., those whose slight variations cause significant changes in the NPV.

Once the sensitive drivers are determined, the Monte Carlo simulation will be performed by assigning mean and standard deviation for each variable based on historical data. Then, using Excel, random values for each variable are generated according to their defined probability distributions. Each trial involves generating a new set of random values for all the sensitive variables and calculating the resulting outcome by running 1,000 simulations. This simulation will provide a probability distribution of the project's NPV measured by the mean or average value, while risk is measured by the standard deviation or coefficient of variation (Brigham, 2007).

C. RESULTS AND DISCUSSION

Project Overview

XYZ Company operates as a Songkok manufacturer with a structured business workflow. The process begins with sourcing raw materials from suppliers in Gresik, which are then stored in the company's warehouse. Artisans visit the warehouse to collect these materials and sew the Songkok at home using the sewing machines provided by XYZ Company. Upon completion, the finished products are returned to the warehouse, where artisans receive their compensation. The next step involves a quality control check to ensure the products meet the required standards. The products are packed and distributed to various city distributors via KAI Logistik. The distributed products are then stored in XYZ Company's warehouses in the respective cities and ready for distribution to retailers. This workflow guarantees an efficient production and distribution system, ensuring a continuous supply of high-quality Songkok in the market. XYZ Company plans to open a new distribution warehouse in Banjarmasin in early 2025. The product offered for the Kalimantan market will be a new brand, with the specification of black Songkok and the XYZ Company's signature gold motives. The product's price is IDR 60,000 and will increase annually according to the Fashion sector's projected Consumer Price Index (CPI).

This warehouse will have a storage capacity of up to 120,000 pieces according to the projected production in the Kalimantan market and historical demand from existing distributors. XYZ Company is considering having a new warehouse by either purchasing or renting a warehouse. Buying a warehouse gives a company control, potential property value growth, and fixed costs. However, this scenario requires much money upfront and ongoing maintenance. It also ties up cash and is hard to sell quickly. Renting is cheaper initially, offers flexibility, and avoids maintenance costs. However, rent can increase, and the property has no equity or control. Hence, this research will conduct two scenarios for the project, i.e., the scenario of buying a warehouse and the scenario of renting a warehouse, to provide the best input for the management's decision-making. The sales quantity is projected using the Compounded Annual Growth Rate (CAGR) of the Muslim population in Kalimantan from the last six years. The population data is gathered from the Central Bureau of Statistics (BPS). Then, the male Muslim population, which is 50% of the total Muslim population as reported from the Population Census 2020 by BPS, is calculated since the consumers of Songkok are only male. Next, the figure is adjusted by the productive age in Indonesia (15 - 64 years old), considering they have the financial resources and purchasing power to buy goods, which, based on BPS data in 2020, is 70%.

After that, the number is further adjusted by 84%, representing the average number of people who shop for Muslim fashion during Ramadan, according to the TGM Research report on Indonesian Muslim consumer spending. This number must be calculated since the demand for Muslim fashion items typically peaks during Ramadan, making it a critical time to assess the market size accurately. Next, the number of people willing to buy is calculated. Since the product positioning is for medium to high income, the number will be multiplied by 80% according to a fashion budget by gender survey by Katadata. Lastly, it will determine the percentage of males who buy black Songkok, which will be 28%, based on a Tokopedia survey of the best-selling men's Muslim fashion products during Ramadan.

Initial Investment

The initial investment for the purchase scenario (including purchasing a new warehouse) is IDR 944,347,650, consisting of land, property, equipment, intangibles, and working capital. The land price per square meter in Banjarmasin is IDR 400,000. The warehouse will be 180 sqm for the required capacity. Therefore, the investment in land is valued at IDR 72,000,000. It has no asset life and salvage value. The property, which measures 180 square meters and has a capacity of 120,000, has a value of IDR 630,000,000. This number is taken from the construction and material price of approximately IDR 3,500,000 per square meter. The construction period for the property is one year. This asset is expected to have a useful life of 20 years and a salvage value of 20% of its initial value at the end of its useful life.

The equipment has a value of IDR 59,042,000. It is projected to last for ten years and will have a salvage value of 10% of its original cost after this period. The intangibles, valued at IDR 7,400,000, represent the costs of obtaining necessary permits. This expense is specifically for securing the licenses required to use the unique golden thread, a distinctive feature of the XYZ Company's products. The intangibles account for ten years of asset life. However, these costs will be amortized until the permits expire; hence, the salvage value is 0%. As for the initial working capital, the value is calculated at IDR 175,905,650 based on the specific needs of the business or project at any given time. The working capital consists of accounts receivable and Inventories since the firm has no accounts payable. On the other hand, the rent scenario requires an initial investment of IDR 242,347,965 consisting of equipment, intangibles, and working capital. The value of those accounts is similar to the purchase scenario.

Financing Plan

The entire investment will be funded 100% by the owner's equity without taking on any debt or external financing since the owner intends to avoid debt for this project, as they have in the past. For this investment, the management decided to accept the project with less than three years in the payback period since the firm has strategic objectives to achieve rapid growth and market expansion by taking a shorter payback period to ensure that the investment project contributes to these goals more quickly.

Stage 1 – Construct Pro Forma Financial Statement

The assumptions for each account must be determined beforehand to construct pro forma financial statements, including the income statement, balance sheet, and cash flow statement. The assumptions are based on historical financial data, interviews with the company owner, and expert opinions. After constructing the assumptions, yearly pro forma income statements, balance sheets, and cash flow statements were developed to understand the financial feasibility of XYZ Company's project of purchasing a new warehouse in Kalimantan. The pro forma income statement result in the purchase and rent scenario shows that gross profit, operating profit, and net profit initially exhibit a rapid upward trend, signifying a strong initial return on investment from the new warehouse. The peak around year 8, followed by a slight decline, suggests that while the project initially boosts profitability significantly, there may be rising costs or diminishing returns in subsequent years. This is due to a higher inflation rate in the costs incurred than the Consumer Price Index (CPI) for the revenue. Therefore, the cost increase is higher than the increase in revenue, decreasing profits after year 8.

Furthermore, the pro forma balance sheet of both the purchase and rent scenario displays a steady increase in total assets over the ten years. This consistent growth reflects the company's effective asset management and ability to accumulate assets progressively. The balance sheet highlights the importance of maintaining a healthy balance between assets and liabilities to ensure long-term financial stability. Moreover, the cash flow statement presents a gradual increase in net cash flow and ending cash balances over the projected period. The incremental growth in net cash flow each year suggests careful cash management and effective cost-control measures. The ending cash balances' linear trend indicates a stable increase in cash reserves over the 10-year period.

Stage 2 – Calculate Weighted Average Cost of Capital (WACC)

XYZ Company is using 100% financing equity from the owner's equity. The Weight of Debt is zero since the company does not have long-term debt, while the Weight of Equity is 100%. Hence, the Weighted Average Cost of Capital (WACC) calculation would only consider the firm's cost of equity. The Cost of Equity uses the Capital Asset Pricing Model, which includes three components. Risk-Free Rate data is taken from Indonesia Bonds Pricing Agency rate for ten years to maturity bond. The Risk-Free Rate is 6.90%. Beta was obtained from Damodaran Emerging Market Beta in January 2024 for the apparel sector, which accounts for 1.19. The market return is 7.38%, according to the Indonesia Equity Risk Premium from Damodaran in January 2024.

Table 1. Cost of Equity Calculation

Risk-Free Rate	Beta	Market Return	Cost of Equity
6.90%	1.19	7.38%	15.68%

Source: Research Data, 2024

$$WACC = (w_i \times r_i) + (w_p \times r_p) + (w_s \times r_r \text{ or } _n)$$
$$WACC = 0 + 0 + (1 \times 15.68\%)$$
$$WACC = 15.68\%$$

The calculation shows a WACC of 15.68%, which implies that the company needs to achieve at least a 15.68% return on its equity investments to increase the firm's value. This required return underscores the importance of strong financial performance and effective risk management strategies to attract and retain investor confidence.

Stage 3: Calculate Free Cash Flow to the Firm (FCFF) and Terminal Cash Flow
Stage 3A: Scenario 1 – Purchase Warehouse

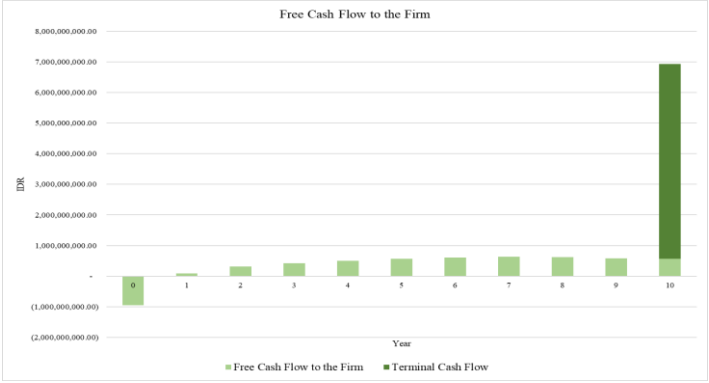

Figure 1. Graph of Free Cash Flow to the Firm for Scenario 1

The Free Cash Flow to the Firm (FCFF) graph in Figure 1 illustrates the ten-year annual cash flows. In the first year, the firm encounters a negative cash flow due to significant capital expenditures on the warehouse. However, the company generated consistent and positive operating cash flows for the next few years, reflecting stable business operations. The Terminal Cash Flow can be calculated after calculating the WACC in Stage 2. As seen in year 10, there is a substantial spike in total cash flow, largely due to the terminal cash flow. The terminal cash flow results are based on the calculation below.

$$\text{Terminal Cash Flow} = \frac{FCF_t(1+g)}{r_a - g}$$
$$\text{Terminal Cash Flow} = \frac{573{,}974{,}515 \times (1 + 6.10\%)}{15.68\% - 6.10\%}$$
$$\text{Terminal Cash Flow} = 6{,}358{,}516{,}952$$

Stage 3B: Scenario 2 – Rent Warehouse

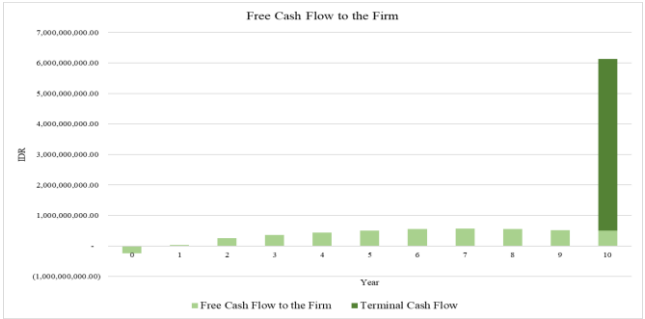

Figure 2. Graph of Free Cash Flow to the Firm for Scenario 2

In order to evaluate the new warehouse project's financial health under the rent scenario, the free cash flow to the firm (FCFF) needs to be calculated. The free cash flow to the firm calculation can be seen in Appendix 14. Moreover, the terminal cash flow is calculated below.

$$\text{Terminal Cash Flow} = \frac{\text{FCF}_t(1+g)}{r_a - g}$$

$$\text{Terminal Cash Flow} = \frac{507{,}394{,}783 \times (1 + 6.10\%)}{15.68\% - 6.10\%}$$

$$\text{Terminal Cash Flow} = 5{,}620{,}943{,}515$$

Stage 4 – Feasibility Analysis using Capital Budgeting Techniques
Stage 4A: Scenario 1 – Purchase Warehouse

The feasibility result of the purchase warehouse scenario is discussed in Table 2 below:

Table 2. Feasibility Analysis Result for Scenario 1

Indicators	Result	Criteria	Decision
Discounted Payback Period	Four years 4 months	Less than 3 years	Reject
Net Present Value	IDR 2,639,293,196	Positive Value	Accept
Internal Rate of Return	32.18%	Higher than 15.68%	Accept

Source: Research Data, 2024

Table 2 presents key financial indicators for evaluating the investment in the purchase warehouse scenario. The Discounted Payback Period is 4 years and 4 months, more than the firm's objective for the investment project of 3 years. The Net Present Value (NPV) is IDR 2,639,293,196, a positive value that signifies the project will generate more cash than the investment cost, making it profitable. Lastly, the Internal Rate of Return (IRR) is 32.18%, well above the required rate of return of 15.68%, suggesting a high return on investment. These results lead to the decision to reject the scenario.

Stage 4B: Scenario 2 – Rent Warehouse

The feasibility result of the rent warehouse scenario is presented in Table 3 below:

Table 3. Feasibility Analysis Result for Scenario 2

Indicators	Result	Criteria	Decision
Discounted Payback Period	2 years 1 month	Less than 3 years	Accept
Net Present Value	IDR 2,878,966,102	Positive Value	Accept
Internal Rate of Return	49.36%	Higher than 15.68%	Accept

Source: Research Data, 2024

The table displays essential financial indicators for analyzing the investment in a rent warehousing project. The Discounted Payback Period is two years and two months, less than the acceptable threshold of three years. The Net Present Value (NPV) is IDR 2,878,966,102, a positive value indicating that the project will create more cash than the investment's cost, resulting in profitability. Finally, the internal rate of return (IRR) is 49.36%, thus being significantly higher than the needed rate of return of 15.68%, indicating a good return on investment. These findings led to the decision to accept the scenario.

Stage 5 – Decide Which Strategy Should be Implemented by the Firm

Based on the feasibility analysis above, the company should rent the warehouse rather than purchase it. Renting the warehouse provides quicker returns on investment, as evidenced by the shorter payback period. Additionally, the projected profitability and return on investment are significantly higher in the rental scenario, as shown in the Internal Rate of Return (IRR). This indicates a lower financial risk and higher potential gains, making it a more attractive and feasible option. Moreover, this scenario generates a higher value for the firm since the Net Present Value (NPV) is also higher. By renting, the firm can maintain greater financial flexibility and allocate resources more efficiently, ensuring sustainable growth and stability in the long run. Therefore, renting the warehouse aligns better with the firm's strategic objectives and financial criteria.

Stage 6 – Assess the Project Risk of the Selected Scenario

Based on the feasibility analysis using various capital budgeting techniques, the project with rent scenario appears feasible as all results meet the required criteria. However, a Monte Carlo simulation analysis will be conducted to assess the project's risk and return fully. Before executing the Monte Carlo simulation, a sensitivity

analysis needs to be performed to identify the sensitive variables. In the Monte Carlo simulation, these sensitive variables will be defined as the assumption variables.

Table 4. Sensitivity Analysis

Variable	Variable Swing	% NPV Swing	Variable Swing	% NPV Swing
Residential Property Price Index (RPPI)	10%	-0.14%	-10%	-0.14%
Direct Labor	10%	-4.53%	-10%	4.53%
Consumer Price Index (CPI)	10%	6.43%	-10%	-6.38%
Inflation Rate	10%	-27.60%	-10%	26.77%
Direct Material	10%	-80.99%	-10%	80.99%
Swing in Price per Unit	10%	100.03%	-10%	-100.03%
Swing in Quantity Sold	10%	100.03%	-10%	-100.03%

Source: Research Data, 2024

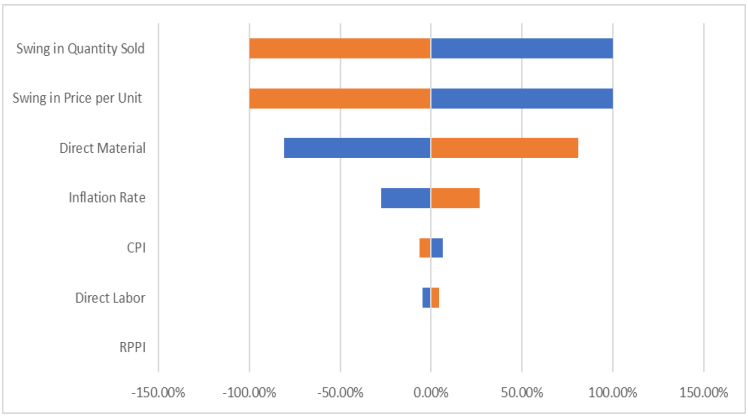

Figure 3. Tornado Chart
Source: Research Data, 2024

The sensitivity analysis includes seven input variables, as shown in Table 4. Among these, four variables are classified as sensitive, as presented in Figure 3: swing in quantity sold, price per unit, direct material, and inflation rate. It is because their NPV swing is greater than their corresponding input variable. Following this, the Monte Carlo simulation will estimate the input variables' probability distribution concerning the Net Present Value (NPV). Before running the Monte Carlo simulation, the input variables must be characterized by a normal distribution. Table 4.8 presents the assumptions for the input variables.

Table 5. Monte Carlo Input Variable Assumption

Variable	Description
Swing in Quantity Sold	The value is obtained from the historical data of the Muslim population in Kalimantan. Mean: 0% Standard Deviation: 2.8%
Swing in Price per Unit	The value is taken from XYZ Company product's historical price per unit. Mean: 0% Standard Deviation: 1.8%
Direct Material	The value is obtained from the product's historical cost of direct material. Mean: IDR 35,750 Standard Deviation: 1523.12
Inflation Rate	The value is obtained from historical data on Indonesia's inflation rate. Mean: 3.95% Standard Deviation: 1.26%

Source: Research Data, 2024

After that, the Monte Carlo simulation study is conducted 1,000 times with four sensitive variables above and one forecast variable, the net present value. The figure below displays the analytical result from the Monte Carlo simulation.

Table 6. Descriptive Statistic Result Monte Carlo Simulation

Min	(7,847,924,953.66)
Max	13,072,314,408.38

Mean	2,719,050,311.08
Standard Deviation	2,944,503,308.91
Median	2,880,679,487.51
Kurtosis	0.37
Skewness	(0.23)
Probability NPV<0	17.79%

Source: Research Data, 2024

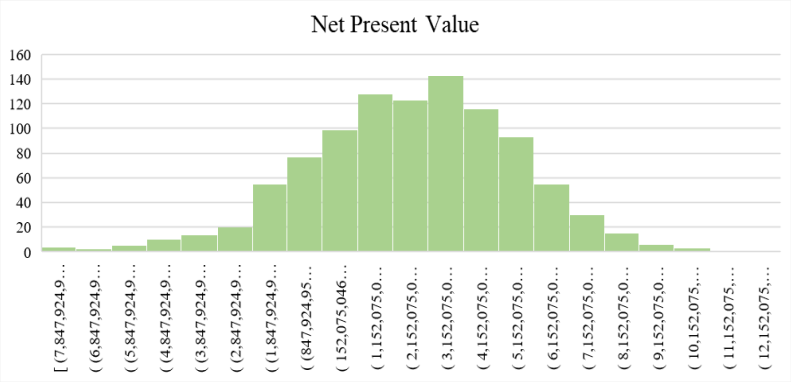

Figure 4. Monte Carlo Simulation Result
Source: Research Data, 2024

Figure 4 illustrates the results of a Monte Carlo simulation conducted to assess the investment project for a new warehouse in Kalimantan by XYZ Company. The descriptive statistics in Table 6 show a wide range in Net Present Value (NPV), from a substantial loss of -IDR 7,847,924,953.66 to a significant gain of IDR 13,072,314,408.38, with an average NPV of IDR 2,719,050,311.08. The high standard deviation indicates considerable variability in potential outcomes, reflecting the project's uncertainty. Moreover, the probability distribution of NPV highlights a 17.79% chance of the project yielding a negative NPV. This implies that while there is roughly an 82.21% probability of achieving a positive NPV, a significant risk remains that cannot be ignored.

The sensitivity analysis results show the importance of managing certain key variables in the project. The price per unit and the quantity sold are extremely sensitive factors, meaning that even small changes in these can greatly impact the project's profitability. This highlights the need to manage pricing and sales strategies carefully. Direct material costs are also very sensitive, so fluctuations in these costs can greatly affect the project's financial performance. The inflation rate is another important variable, showing that economic conditions can significantly influence the project's outcomes. The Monte Carlo simulation results highlight the uncertainty and risks associated with these variables. The project's Net Present Value (NPV) has a wide range of likely outcomes, indicating high variation and the possibility of huge returns and substantial losses. There is also a significant risk that the project may result in a financial loss, highlighting the significance of careful cost management and ongoing monitoring. Focusing on regulating these sensitive variables allows the project to manage financial risks better and increase its chances of success. In conclusion, while the investment in the new warehouse presents a positive expected return, careful financial management and risk mitigation are essential to address the identified risks.

CONCLUSION

Based on the comprehensive project analysis, XYZ Company should rent the new warehouse in Banjarmasin. The project is financially feasible; however, to achieve the desired outcomes, XYZ Company must generate the projected revenue by meeting expected sales quantities. The quantity of Songkok sold is a critical variable affecting the NPV. Therefore, XYZ Company should implement a robust marketing plan to boost sales, such as offering discounts for bulk purchases to encourage higher sales volumes. To maintain stable pricing, XYZ Company should consider securing long-term customer agreements.

Additionally, to ensure consistent direct material supply, XYZ Company should establish business contracts with suppliers. While the company has strong brand recognition, relying solely on this is insufficient. A well-aligned marketing strategy that promotes bulk purchase discounts and other sales incentives will help navigate potential challenges and achieve sustainable growth and profitability. By implementing these strategies,

XYZ Company can enhance its operational stability and financial performance, ensuring the success of the new warehouse project in Banjarmasin.

REFERENCES

Badan Pusat Statistik. (2024, January 2). Indeks Harga Konsumen (2018=100) Menurut Kelompok dan Sub Kelompok 02 Pakaian dan Alas Kaki, 2023. bps.go.id. https://www.bps.go.id/id/statistics-table/2/MTkwNiMy/indeks-harga-konsumen--2018-100--menurut-kelompok-dan-sub-kelompok-02-pakaian-dan-alas-kaki.html

Brealey, R. A., Myers, S. C., & Allen, F. (2011). Principles of corporate finance. New York: McGraw-Hill Education.

Brigham, E. F., & Ehrhardt, M. C. (2007). Financial Management: Theory and Practice. USA: South-Western

Pub. Country Default Spreads and Risk Premiums. (2024, January 5). NYU Stern. Retrieved May 30, 2024, from https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

Damodaran, A. (n.d.). Betas by Sector (U.S.). NYU Stern. Retrieved May 30, 2024, from https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html

Evrin, V. (2021, April 28). Risk Assessment and Analysis Methods: Qualitative and Quantitative. ISACA. Retrieved May 30, 2024, from https://www.isaca.org/resources/isaca-journal/issues/2021/volume-2/risk-assessment-and-analysis-methods

Fair Prices and Yield. (n.d.). PHEI. Retrieved May 30, 2024, from https://www.phei.co.id/en-us/Data/Fair-Prices-and-Yield

Gitman, L. J., & Zutter, C. J. (2015). Principles of managerial finance. England: Pearson.

Ini Provinsi dengan Penduduk Muslim Terbanyak di Pulau Kalimantan. (2022, August 9). Databoks. Retrieved May 30, 2024, from Ini Provinsi dengan Penduduk Muslim Terbanyak di Pulau Kalimantan

Kajian Ekonomi dan Keuangan Syariah Indonesia (KEKSI) 2023. (n.d.). Bank Indonesia. Retrieved May 30, 2024, from https://www.bi.go.id/id/keksi/default.aspx

Lewis, R. (2015). Modest Fashion: Styling Bodies, Mediating Faith. I.B. Tauris.

Melirik Bidang Usaha yang Paling Berpotensi di Banjarmasin. (n.d.). Ralali News. Retrieved May 30, 2024, from https://news.ralali.com/melirik-bidang-usaha-yang-paling-berpotensi-di-banjarmasin/

Metropolis, N., & Ulam, S. (1949). "The Monte Carlo Method". Journal of the American Statistical Association, 44(247), 335-341.

Peluang Pasar: Produk Fashion Muslim. (2022, September 30). UKMINDONESIA.ID. Retrieved May 30, 2024, from https://ukmindonesia.id/baca-deskripsi-posts/peluang-pasar-produk-fashion-muslim/

Populasi Muslim Indonesia Terbanyak di Asia Tenggara, Berapa Jumlahnya? (2023, October 19). Databoks. Retrieved May 30, 2024, from https://databoks.katadata.co.id/datapublish/2023/10/19/populasi-muslim-indonesia-terbanyak-di-asia-tenggara-berapa-jumlahnya

Sekretariat Kabinet Republik Indonesia | Statistics Indonesia Releases 2020 Census Results. (n.d.). Sekretariat Kabinet. Retrieved May 30, 2024, from https://setkab.go.id/en/statistics-indonesia-releases-2020-census-results/

Survei: Anggaran Belanja Fesyen Pria Lebih Mahal ketimbang Perempuan. (2022, March 16). Databoks. Retrieved May 30, 2024, from https://databoks.katadata.co.id/datapublish/2022/03/16/survei-anggaran-belanja-fesyen-pria-lebih-mahal-ketimbang-perempuan

Survei Harga Properti Residensial Triwulan I 2024: Peningkatan Harga Properti Residensial Berlanjut. (2024, May 16). Bank Indonesia. Retrieved May 30, 2024, from https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_2610424.aspx

TGM Ramadan Consumers Statistics in Indonesia | Get Insights 2024. (n.d.). TGM Research. Retrieved May 30, 2024, from https://tgmresearch.com/ramadan-2024-insights-in-indonesia.html

TechsciResearch pvt ltd. (n.d.). Ethnic Wear Market Size and Forecast 2029 | TechSCI Research. TechsciResearch Pvt Ltd. https://www.techsciresearch.com/report/ethnic-wear-market/22660.html