JOURNAL OF
BUSINESS AND MANAGEMENT
Vol. 1, No.4, 2012: 240-247

FINANCIAL FEASIBILITY STUDY OF PT JASA MEDIVEST REFINANCING PLAN CASE STUDY

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Abstract

Toxic Waste is always related in every single human activities, it will never separated from the human activities because toxic waste itself produce through the activities. For most of people, the main problem is in our country, most of the business empire did not have proper toxic waste management system that cause pollution. One of the toxic waste that happens to make some problem in the world is Medical waste, this type of waste is produce from every medical activity, it can happens from a giant hospital or private practice at home as long as there are a medical activity the happen in the area. PT. Java Medivest is one of pioneer in medical waste management business sector, it began to operate since March 2009, with operating one unit of incinerator that have a capacity of 12 ton/day. PT. Jasa Medivest established by Foreigners Capital, with 95% of the shares is held by Pantai edivest Sdn.Bhd, Malaysia and the other 5% is for PT. Jasa Sarana. Incinerator PT. Java Medivest is in Interchange Road Toll Dawuan, Dawuan Tengah, Karawang, Jawa Barat. The objective of this research is to determine whether the Refinancing fo PT. Java Medivest is feasible or not. The data will be process and analyze by concluding the problem solving model based on the method of making a good feasibility study, this model is a common type of model of concluding feasibility study.
Findings: Equity capital according to the Deed Decree of Shareholder No. 25 dated November 8, 2011 made before Mala Mukti, SH, LL, M, Notary in Jakarta, with the amount of Rp.448.291.000.000, 00, divided into 48.1 million shares, each share par value is Rp.9.320, 00 . The changes, issued and paid-up capital has received approval from the Investment Coordinating Board according to his letter No. 2742/A.8/2011 dated October 31, 2011. From the capital, have been issued and paid up for 25.04% or 12,043,369 shares with a total nominal value of Rp.112.244.199.080, 00 by the shareholders. With the proposed sale of all the shares owned by Pantai Medivest Sdn Bhd, Malaysia, the PT. Jasa Sarana is the sole shareholder. But according to the provisions Act of Limited Liability Company No. 40 of 2007, later than 6 (six) months after becoming the sole owner, PT. Jasa Sarana must release ownership of shares to investors. However PT Jasa Sarana committed will remain the majority shareholder. As a conclusion, the NPV of this project is Rp.2.728.182.294 and the IRR is 24,47%

Keywords: Feasibility-Study; NPV; IRR; Payback-Period; Refinancing, Medical Waste

Category: Finance

Introduction

Toxic Waste is always related in every single human activity, it will never separated from the human activities because toxic waste itself produce through the activities. For most of people, the main problem is in our country, most of the business empire did not have proper toxic waste management system that caused pollution. One of the toxic waste that happens to make some problem in the world is Medical waste, this type of waste is produce from every medical activity, it can happens from a giant hospital or private practice at home as long as there are a medical activity the happen in the area. Medical waste contains some element such as Pathogen Bactery, Virus, Chemical Toxic Waste, and Radioactive element that extremely danger, it can makes the society get some illness or infected that will harm their life, the object of medical waste can be sharp object like needle or injection fuse., Infectious waste that related to highly infected virus and some

laboratorium waste that occurs when there is a microbiology check. Nevertheless medical waste is also the waste that came from our body system.

Medical waste needs to be handle perfectly before it goes to the dumping area, the perfect way to handle the waste is by burn it into ash in a incinerator that has a minimum heat temperature of 800°C – 1000°C.

PT. Java Medivest is one of pioneer in medical waste management business sector, it began to operate since March 2009, with operating one unit of incinerator that have a capacity of 12 ton/day. PT. Jasa Medivest established by Foreigners Capital, with 95% of the shares is held by Pantai edivest Sdn.Bhd, Malaysia and the other 5% is for PT. Jasa Sarana. Incinerator PT. Jasa Medivest is in Interchange Road Toll Dawuan, Dawuan Tengah, Karawang, Jawa Barat.

Theoretical Foundation

Feasibility study is an evaluation and research of a project designed to uncover the strengths and weaknesses of the project and determine whether the project is feasible or not. In other words, a feasibility study is a preliminary study undertaken to assess whether a planned project is likely to be practical and successful and to estimate its cost. A feasibility study is used by people to make decisions about a project or business ideas. By doing a feasibility study, people will have strong recommendations if a business idea is worthy of being achieved. There are 5 main types of feasibility studies known as TELOS, which are Technology, Economic, Legal, Operational and Schedule Feasibility.

Ross, Westerfield and Jordan said on their book *Corporate Finance Fundamentals*. The basic idea of Net Present Value is that an investment is worth undertaking if it creates value for the owner. Net Present Value is the difference between an investment's market value and its cost. To determine the Net Present Value, we can simply find the present value of the after tax cash flow of the project.

The internal rate of return (IRR) based on Lawrence L. Gitman book, *Principles of Mangerial Finance,* is the discount rate that equates the NPV of an investment opportunity with $0 (because the present value of cash inflows equals the initial investment).The IRR is closely related to NPV. In this project, the internal rate of return (IRR) of the project is equal to a discounted rate which the net present value (NPV) of the project is zero, which means that the project revenue is equal with project costs

Internal rate of return are commonly used to evaluate the desirability of investments or projects. The higher the IRR of the project, the more desirable it is to implement the project. And also the lower the IRR of the project, the less desirable it is to implement the project. Based on the IRR rule, an investment is acceptable if the IRR exceeds the required return, otherwise it should be rejected.

Also from Gitman's book,WACC is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted. All capital sources - common stock, preferred stock, bonds and any other long-term debt are included in a WACC calculation. All else equal, the WACC of a firm increases as the beta and rate of return on equity increases, as an increase in WACC notes a decrease in valuation and a higher risk.

Sensitivity analysis is the study of how uncertainty in the output of a model (numerical or otherwise) can be apportioned to different sources of uncertainty in the model input. For this definition of sensitivity analysis to be of use, it must first be made what is meant here by model, numerical or otherwise, as well as by the terms input and output which will be used.

Methodology

There are 5 major steps in doing this research, which are: Problem Identification, Literature study, Data Collection, Data Processing and Analyzing, and Conclusion and Recommendation. These steps need to be taken in order to complete the project.

First, it needs to do problem identification from the research, so it will see the problem more clearly. This step is about defining the problem, and determining the research objectives. The objective on this project is to determined the feasibility of the project whether this project is

feasible or not, based on the NPV, IRR, and PBP calculation.

Literature reviews in this project are intended to help reader to get the information needed to understand this project. It provides literature study to help reader to get the information needed. The literature reviews about this project are taken from several sources and media, which are printed books, brochures, article from the internet, and printed reports from previous feasibility project. Previous feasibility project had been done and writer used the report as guidance for making this feasibility project.

There are 2 kinds of data which will be used in this project, revenue calculation data and cost calculation data. The data which is going to be used for calculating the revenue is the data that we have from the company projected sales for 5 years, and there are 3 types of costs going to be calculated in this project, investment cost, fixed cost and variable cost.

The data will be process and analyze by concluding the problem solving model based on the method of making a good feasibility study, this model is a common type of model of concluding feasibility study.

The conclusion of this research will be taken from the calculation of the overall project's costs, revenues, NPV, IRR, and PBP. Recommendation will be taken also from the overall project's costs, revenues, NPV, IRR, and PBP. Recommendations are needed to improve the quality of service in Java Medivest Medical Waste Management Services.

Data Analysis

Cash flow Analysis

Estimated initial cash for the beginning cash flow is Rp.140.000.000,00 which will used to continue the business, this fund is the accumulation of cash inflow and outflow process in January to July of 2011.

In the year of 2011 period August to December there is an amount of revenue of Rp.1.503.375.000,00 and the amount of cost of Rp.1.917.510.350,00, because of this situation, the cash flow of PT Jasa Medivest will be a negative of Rp.414.135.350,00.

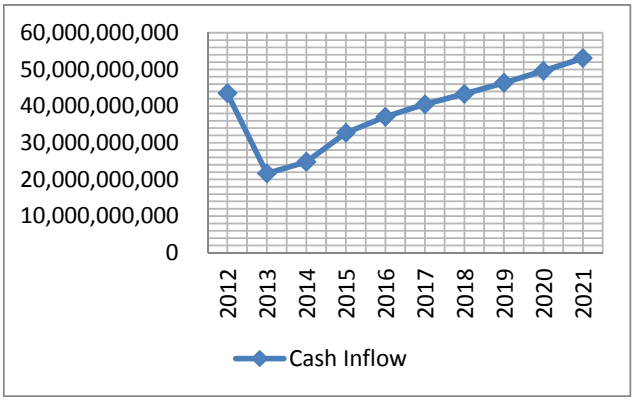

Figure 4.15: Cash Inflow Graphic

The cash inflow in 2012 will be higher than in 2013 because of the company receives the cash from bank loan at the amount of Rp.30.333.290.000,00 and an addition from the activities of the waste process at the amount of Rp.12.989.160,00. In 2013 the cash flow is only from the revenue stream, the amount of revenue will periodically increase due to the optimal plan of incinerator machine.

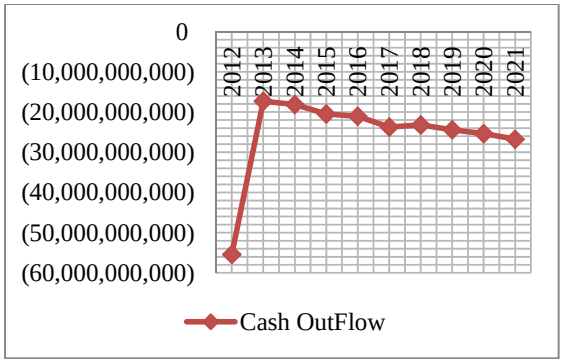

Figure 4.16: Cash Outflow Graphic

In the year of 2012 the new investment of Rp.23.157.700.000,00, which is consist of Land, Truck, Wheel bin, Cooler, and Forklift. Direct cost that consist of Incinerator cost, Transportation Cost, Direct Labor Cost, Employee Welfare Cost, Maintenance and Insurance Cost, Emission Cost, and Depreciation Direct Fixed Cost, which have a total of Rp.8.874.819.510,00. Operating Cost consists of every operating cost beside the operating factory cost, and other cost from the cost of running the company. There will be an amount of Rp.13.707.000.000,00 for clear the loan from the current financial activities of PT Java Medivest.

In 2013 there will be no new investment, so the amount of cash outflow will be largely decrease, but the cost will increase in the future due to inflation and the level production in the factory.

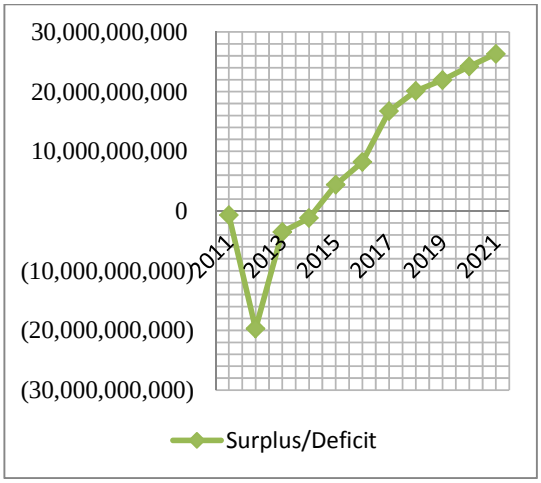

Figure 4.17: Surplus-Deficit Graphic

From the graphic above it shows the net profit projection of PT Jasa Medivest from 2011 to 2021. in the first 4 year from 2011 to 2014, PT Jasa Medivest did not gain any profit, due to new investment and loan payment to the bank. After the year of 2014, PT Jasa Medivest will start to gain profit from the sales, it because the optimal plan of incinerator machine, and in 2016 the loan payment will be complete, based on the loan payment scenario, so in the year 2017, the company will be has zero liabilities in from the factory activities, if the plan goes smoothly.

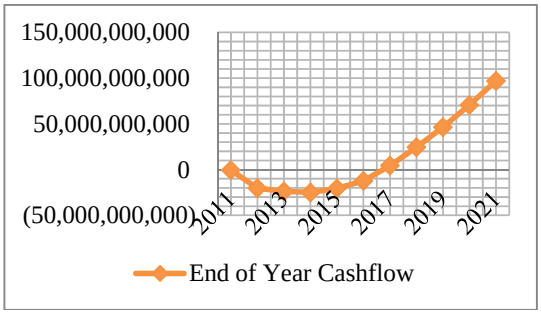

Figure 4.18: End of Year Cash Flow Graphic

The end of year cash flow will show the data of after tax cash flow, this graphic show the growth of the company cash flow structure. The cash flow will be positive in 2017, This calculation based on the assumption of Cateris Paribus.

Net Present Value, Internal Rate of Return, and Payback Period

- *WACC*

The WACC of the PT.Java Medivest is 22,08%, the result from WACC will be used as a discount rate in calculating NPV and IRR, because WACC calculation measure PT Jasa Medivest cost of capital.

End-of-Year Cash flow and WACC of the company as Discount Rate are used for calculating NPV, IRR, and PBP. The result of calculation as follows,

Table 4.7: NPV, IRR, and PBP

Year	Cash Inflow	Cash Outflow	Net Cash Flow	Loan Payment Installment	Taxable Income
2012	Rp 43.354.450.000	Rp (54.350.569.072)	Rp (10.996.119.072)	Rp 7.781.575.187	Rp (18.777.694.259)
2013	Rp 21.619.735.200	Rp (17.117.350.454)	Rp 4.502.384.746	Rp 7.781.575.187	Rp (3.279.190.441)
2014	Rp 24.785.482.140	Rp (17.953.364.201)	Rp 6.832.117.939	Rp 7.781.575.187	Rp (949.457.248)
2015	Rp 32.708.574.597	Rp (20.311.331.076)	Rp 12.397.243.521	Rp 7.781.575.187	Rp 4.615.668.334
2016	Rp 37.079.147.376	Rp (21.066.500.407)	Rp 16.012.646.969	Rp 7.781.575.187	Rp 8.231.071.782
2017	Rp 40.484.375.196	Rp (23.988.195.148)	Rp 16.496.180.049	Rp -	Rp 16.496.180.049
2018	Rp 43.318.281.460	Rp (23.213.520.778)	Rp 20.104.760.682	Rp -	Rp 20.104.760.682
2019	Rp 46.350.561.162	Rp (24.430.871.214)	Rp 21.919.689.948	Rp -	Rp 21.919.689.948
2020	Rp 49.595.100.444	Rp (25.369.181.857)	Rp 24.225.918.587	Rp -	Rp 24.225.918.587
2021	Rp 53.066.757.475	Rp (26.744.930.763)	Rp 26.321.826.712	Rp -	Rp 26.321.826.712

Income Tax	After Tax Cash Flow	PVIF	Discounted After Tax Cash Flow	Cummulative Discounted After Tax Cash Flow
Rp -	Rp (18.777.694.259)	1,0000	Rp (18.777.694.259)	Rp (18.777.694.259)
Rp -	Rp (3.279.190.441)	0,8191	Rp (2.686.111.377)	Rp (21.463.805.636)
Rp -	Rp (949.457.248)	0,6710	Rp (637.074.421)	Rp (22.100.880.058)
Rp 1.153.917.083	Rp 3.461.751.250	0,5496	Rp 1.902.689.795	Rp (20.198.190.263)
Rp 2.057.767.945	Rp 6.173.303.836	0,4502	Rp 2.779.375.089	Rp (17.418.815.173)
Rp 4.124.045.012	Rp 12.372.135.036	0,3688	Rp 4.562.801.092	Rp (12.856.014.082)
Rp 5.026.190.171	Rp 15.078.570.512	0,3021	Rp 4.555.168.364	Rp (8.300.845.718)
Rp 5.479.922.487	Rp 16.439.767.461	0,2475	Rp 4.068.153.296	Rp (4.232.692.422)
Rp 6.056.479.647	Rp 18.169.438.940	0,2027	Rp 3.682.989.946	Rp (549.702.477)
Rp 6.580.456.678	Rp 19.741.370.034	0,1660	Rp 3.277.884.771	Rp 2.728.182.294

NPV	Rp 2.728.182.294
IRR	24,47%
PBP	5,24

- NPV

The calculation for NPV itself would be done by Microsoft Excel's formula. Which discussed about Net Present Value (NPV). As calculated before the WACC in this

project is 22,08 %, therefore the NPV of this project is Rp.2.728.182.294

- IRR

The calculation for IRR itself would be done by Microsoft Excel's formula, which discussed about Internal Rate of Return (IRR). After the calculation using Microsoft Excel 2007's formula, the value produced for the project's internal rate of return (IRR) is 24,47%

- Payback Period

For the payback period calculation the writer used the Payback Period formula, Based on the calculation, it is proven that the payback period of this project is 5 years and 3 months. By the end of this date, this project will generate positive after tax cash flow.

Sensitivity Analysis

For the sensitivity analysis, there will be five assumptions to analyze, which are price, production level, gasoline price, inflation, and interest loan. The price and production level are an internal factors which are an important part of the cash inflow on the company that has a revenue stream only from the medical waste service. Meanwhile gasoline price, inflation, and interest loan are an external factors which occured on the cash outflow, for gasoline price and inflation are an uncontrolable factor, this two factor is a government policy, which are a fluctuative factor that can be change at any time due to a new policy, on the other hand interest loan may has a similiar type with the other two but this factor has a various of numbers based on the bank policy, so the company has the opportunity for choosing the most effective rate for the loan deal.

Table 4.8: Sensitivity Analysis Data

	Base Value	Point of Change	Low	Middle	High
Price/ Ton	Rp8.018.000	15%	Rp6.815.300	Rp8.018.000	Rp9.220.700
Inflation	4,5%	15%	5,12 %	4,5%	3,78 %
Gasoline	Rp8.650,0		Rp7.352,5	Rp8.650,0	Rp9.947,5
Interest Loan	10,22%	15%	11,75%	10,22%	8,69 %
Production Level	45%	15%	38,25%	45%	51,75%

- Price

This calculation will show how the change in medical waste service price can change the value of NPV and IRR. The change of price is based on the average price of the service for each ton.

Table 4.9: Sensitivity Analysis on Price

Price/ Ton	Rp6.815.300,00	Rp8.018.000,00	Rp9.220.700,00
NPV	(Rp10.249.233.125)	Rp.2.728.182.294	Rp15.705.597.714
IRR	13,36%	24,47%	36,56%

Based on the table above, it shows that the decrease in Services Price can affect the NPV and IRR to (Rp.10.249.233.125) and 13,36%. The increase in Services price can affect the NPV and IRR to Rp.15.705.597.714 and 36,56%.

- Production Level

This calculation will show how the change in production level of waste process can change the value of NPV and IRR. The change of production level is based on the optimalization plan of incinerator machine.

Table 4.10: Sensitivity Analysis on Production Level

Production Level	38%	45%	52%
NPV	(Rp.3.100.442.972)	Rp.2.728.182.294	Rp8.556.807.560
IRR	19,60%	24,47%	29,48%

Based on the table above, it shows that the decrease in production level can affect the NPV and IRR to (Rp.3.100.442.972) and 19,60%. The increase in production level can affect the NPV and IRR to Rp8.556.807.560 and 29,48%.

- Gasoline/Fuel price Non-Subsidiary

This calculation will show how the change in Gasoline Price can change the value of NPV and IRR. The change of price is based on the average price of Non-Subsidiary Fuel Price.

Table 4.11: Sensitivity Analysis on Gasoline

Gasoline	9.948	8.650	7.353
NPV	Rp.943.289.965	Rp.2.728.182.294	Rp.4.513.074.623
IRR	23,18%	24,47%	26,42%

Based on the table above, it shows that the decrease in Gasoline Price can affect the NPV and IRR to Rp.4.513.074.623 and 26,42%. The increase in Gasoline price can affect the NPV and IRR to Rp.943.289.965 and 23,18%.

- Interest Rate

This calculation will show how the change in Interest Rate can change the value of NPV and IRR. The change of price is based on the interest rate of the bank loan.

Table 4.12: Sensitivity Analysis on Interest rate

Interest Rate	11,75%	10,22%	8,69%
NPV	Rp269.747.177	Rp.2.728.182.294	Rp5.196.792.690
IRR	22,86%	24,47%	26,17%

Based on the table above, it shows that the decrease in Interest Rate can affect the NPV and IRR to Rp5.196.792.690 and 26,17 %. The increase in Interest rate can affect the NPV and IRR to Rp269.747.177 and 22,86%.

- Inflation

This calculation will show how the change in Inflation rate can change the value of NPV and IRR. The change of price is based on Indonesia level of Inflation from Bank Indonesia.

Table 4.13: Sensitivity Analysis on Inflation

Inflation	5,12%	4,45%	3,78%
NPV	Rp2.266.939.340	Rp.2.728.182.294	Rp5.195.792.690
IRR	24,07%	24,47%	24,85%

Based on the table above, it shows that the decrease in Inflation rate can affect the NPV and IRR to Rp5.195.792.690 and 24,85%. The increase in Inflation rate can affect the NPV and IRR to Rp2.266.939.340 and 24,07%.

A. Sensitivity Analysis on NPV

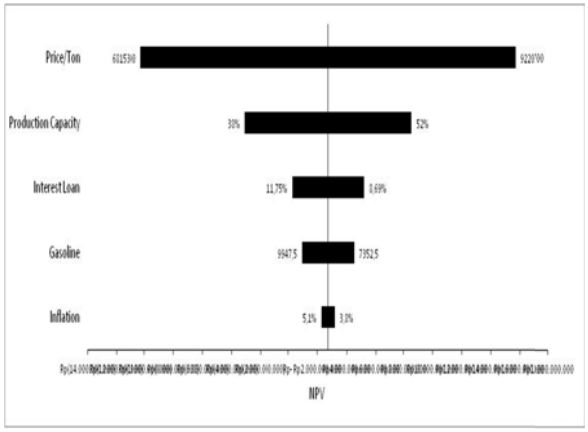

Figure 4.19: Sensitivity Analysis –Tornado Chart

It shows in the figure above, the longest bar is representing the most sensitive factors in determining the output. As shown on the graphic, the longest bar is the price bar. Therefore, it concludes that the level of price is the most affecting factors in determining the NPV of the project.

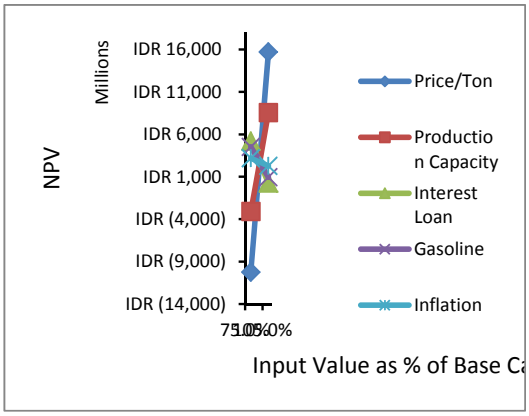

Figure 4.20 Sensitivity Analysis – Spider Chart

Above is the spider chart for the NPV of the project. Spider chart also can indicate the level on sensitivity from many inputs to one output. As it shown, the price line is the most attractive line among the others. The slope of the price line indicates that in every increasing of the level of price, the NPV will also increase. It shows that the change of the level of price bring big impact for the value of NPV.

Conclusion and recommendation

Conclusion

- **Conclusion on Cashflow Analysis**

From the cashflow which has been projected through out from 2012 to 2021, the result is quite good, the cash inflow are increased from year to year due to the optimal plan of the Incinerator machine, and the cash outflow will also increased because of the increase in the production level. Based on the cashflow, it shows that the annual cash flow will generate a surplus cashflow started on the year 2014, but the end of year cashflow will reach the postive point is on the year 2017, and after 2017 the PT Jasa Medivest is consider to be a reliable company. Total cash inflow from this project is Rp.392.362.465.050, and the total cash outflow is Rp.254.545.814.968.

- **Conclusion on NPV, IRR, and Payback Period**

As explain in the Theoretical Foundation, the Net Present Value, Internal Rate of Return and Payback Period calculation will be the biggest aspect which will conclude this project is feasible or not.

From the Net Present Value Calculation which has a result of Rp.2.728.128.294, which is consider to be a healthy project, but from the other perspective which is the investment perspective, this project is not good enough to be invested, due to the amount of cash outflow that the company will have to spend every year is around hundred billion rupiah. In the IRR calculation the number of Internal Rate of Return of the project is 24,47% which is above WACC of the company, which means this project is quite safe enough to be implemented. The Payback Period of the company is in 5 years and 3 months which is good because it still in the middle of project lifetime.

- **Feasibility Study Result**

From the analysis, it conclude that the Refinancing Project of PT.Jasa Medivest is **FEASIBLE** and can be implemented

Recommendation

- **New Proportion on The Refinancing Loan**

PT Jasa Medivest Refinancing Plan has a loan proportion of 50:50 in equity and debt which is PT Jasa Medivest agree to loan from the bank to fund the 75% current asset and 25% of the new investment. Based on the research, the most effective Refinancing Loan for 5 years of maturity is 85% for the current asset and 35% for the new investment, from the new refinancing loan the result of NPV Calculation is,

Table 5.1: NPV, IRR, and PBP of the New Refinancing Loan Proportion

After Tax Cash Flow	PVIF, 15%, N	Discounted After Tax Cash Flow	Cummulative Discounted After Tax Cash Flow
IDR (11.263.089.555)	1	IDR (11.263.089.555)	IDR (11.263.089.555)
IDR (5.456.072.686)	0,8191	IDR (4.469.279.593)	IDR (15.732.369.148)
IDR (3.026.869.442)	0,6710	IDR (2.030.993.077)	IDR (17.763.362.225)
IDR 1.986.286.498	0,5496	IDR 1.091.726.926	IDR (16.671.635.299)
IDR 4.789.281.464	0,4502	IDR 2.156.253.758	IDR (14.515.381.541)
IDR 12.372.135.036	0,3688	IDR 4.562.801.092	IDR (9.952.580.449)
IDR 15.078.570.512	0,3021	IDR 4.555.168.364	IDR (5.397.412.085)
IDR 16.439.767.461	0,2475	IDR 4.068.153.296	IDR (1.329.258.790)
IDR 18.169.438.940	0,2027	IDR 3.682.989.946	IDR 2.353.731.156
IDR 19.741.370.034	0,1660	IDR 3.277.884.771	IDR 5.631.615.927

NPV	IDR	5.631.615.927
IRR		27,96%
PBP		5,19

As it shows in the calculation, the Net Present Value of this project will increase to Rp.5.631.615.927 which is higher than the

actual plan, the IRR itself will be higher consider to the increasing in the NPV, for the payback period, the result is similiar to the actual plan.

- **New Incinerator Machine Plan**

Due to the amount of end of year cashflow that will generate a positive cashflow in 2017, it is possible to the company to buy a new Incinerator machine for help the business growth, the price of the incinerator machine is assume to be the same as the incinerator machine in the year of 2012, with the new incinerator, the maximum level of production will twice more than before, it means there will be 24 tons of Medical waste that can be process in a day, the calculation of NPV, IRR, and Payback period as follows,

Table 5.2: NPV, IRR, and PBP of the Plan of Buy New Incinerator Machine

After Tax Cash Flow	PVIF	Discounted After Tax Cash Flow	Cummulative Discounted After Tax Cash Flow
Rp (23.574.403.925)	1	Rp (23.574.403.925)	Rp (23.574.403.925)
Rp (3.526.749.755)	0,8191	Rp (2.888.896.761)	Rp (26.463.300.686)
Rp (1.194.258.515)	0,6710	Rp (801.333.134)	Rp (27.264.633.820)
Rp 3.280.440.429	0,5496	Rp 1.803.035.538	Rp (25.461.598.282)
Rp 6.129.528.476	0,4502	Rp 2.759.666.332	Rp (22.701.931.950)
Rp 22.125.068.564	0,3688	Rp 8.159.649.624	Rp (14.542.282.326)
Rp 33.503.984.596	0,3021	Rp 10.121.403.124	Rp (4.420.879.202)
Rp 29.396.006.404	0,2475	Rp 7.274.279.312	Rp 2.853.400.110
Rp 32.621.158.966	0,2027	Rp 6.612.389.127	Rp 9.465.789.236
Rp 35.799.331.967	0,1660	Rp 5.944.171.295	Rp 15.409.960.531

NPV	Rp	15.409.960.531
IRR		31,23%
PBP		5,19

As it shows in the calculation, the Net Present Value of this project will increase to Rp.15.409.960.531 which is much more higher than the actual plan, the IRR itself will be much higher consider to the increasing in the NPV, for the payback period, the result is similiar to the actual plan.

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