



FINANCIAL FEASIBILITY STUDY OF NEW EQUIPMENT INSTALLATION OF CISITU BARU NUMBER 1 BOARDING HOUSE

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ABSTRACT

Cisitu Baru number 1 boarding house is located in Jalan Cisitu Baru number 1. Currently, this boarding house has 26 rooms with IDR 1,150,000.00 as the price of the boarding house. Moreover, this boarding house has some facilities such as wifi, bathroom inside room, bed, pillow, desk, and chair. On the other hand, this boarding house needs some replacement in bed, pillow, desk, and chair because the furniture is quite old and not worth to be used. Furthermore, the boarding house needs to install the water heater because the residents and also people who are looking for a boarding house want to have a water heater due to cold weather in Bandung. Therefore, Cisitu Baru number 1 boarding house has a plan to invest in a water heater and replace all the furniture with an increased price which is IDR 1,350,000.00 per month. This project cost about IDR 122,222,000.00 and it will be financed using 100% equity. To determine whether the project is feasible or not, it needs to calculate the feasibility study of this project using capital budgeting analysis. Based on the calculation of the capital budgeting analysis, the Net Present Value of the project is IDR 87,166,396.20 with 33% of Internal Rate of Return. Then the Payback Period is 2.71 years with 3.89 years as the Discounted Payback Period. In addition, the Profitability Index is 1.71. According to the result of all capital budgeting analysis, the project is feasible and accepted because it has a positive Net Present Value, with a 33% of Internal Rate of Return which is greater than the Weighted Average Cost of Capital, and the Payback Period is 2.71 years and 3.89 Discounted Payback Period, below the maximum Payback Period acceptance which is 10 years based on the owner preference.

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INTRODUCTION

Boarding houses become an important thing for college students especially for those who come from another city or even different island because their boarding house becomes their second home. Therefore, when people want to choose their boarding house, they must know at least two things which are the price and also the facilities that the boarding house offer. These two things become important because money will be worth the value which has a meaning that the money that has been spent should capture the effectiveness where the spender can get the same result with low cost or better result with the same cost (Sinclair, 2015).

Jalan Cisititu Baru became one area of boarding houses around Institute Technology of Bandung (Fernanda, 2014). Cisititu Baru number 1 boarding house is one of the boarding houses located in Jalan Cisititu Baru. It is located in Jalan Cisititu Baru number 1 with 26 rooms in total. Moreover, according to the manager of Cisititu Baru number 1 boarding house, Mrs. Imah, the price of Cisititu Baru number 1 boarding house is IDR 1,150,000.00 per month with some facilities such as free wifi, 24 hours access, bathroom inside each room, bed, pillow, chair, and desk. On the other hand, Mr. Kevin, the owner of Cisititu Baru number 1 boarding house, said that most of the furniture is quite old and not worth using anymore. Therefore, he wants to replace all of the furniture that includes bed, chair, desk, and pillow for 26 rooms. Furthermore, Mrs. Imah said that most people that come and ask their boarding house, they always ask whether the rooms have a water heater or not. She also stated that most people cancel to book their boarding house because they do not have a water heater facility. Moreover, Donny, one of the boarding house's resident, said that the weather in Bandung is quite cold and it affects the water temperature. Therefore, he also needs an improvement in water heater facilities. "By improving the facilities of Cisititu Baru number 1 boarding house, the price of the boarding house should be increased too", said Mr. Kevin.

METHODS

This figure is the research design of this research. First thing first, the research should know the problem that wants to be identified. By knowing the problem that wants to be identified, then the author can propose the research questions and research objectives to be answered. Based on the research question and research objective, then the author does a literature review that can help the researcher to know which methodology that the author uses. After doing literature review, the next step is data collection. It became important because the data that have been collected will be analysis in the next step. For the last step is data analysis. In data analysis, there are 8 stages that should be followed to solve the problem. These 8 stages consist of generate the Pro Forma Financial Statement of Cisititu Baru number 1 boarding house without new equipment installation, generate Pro Forma Financial Statement of Cisititu Baru number 1 boarding house with new equipment installation, calculate the WACC, calculate the Free Cash Flow to the Firm without new equipment installation project, calculate the Free Cash Flow to the Firm with new equipment installation project, calculate the incremental Free Cash Flow to the Firm, do capital budgeting analysis, and the last step is risk analysis.

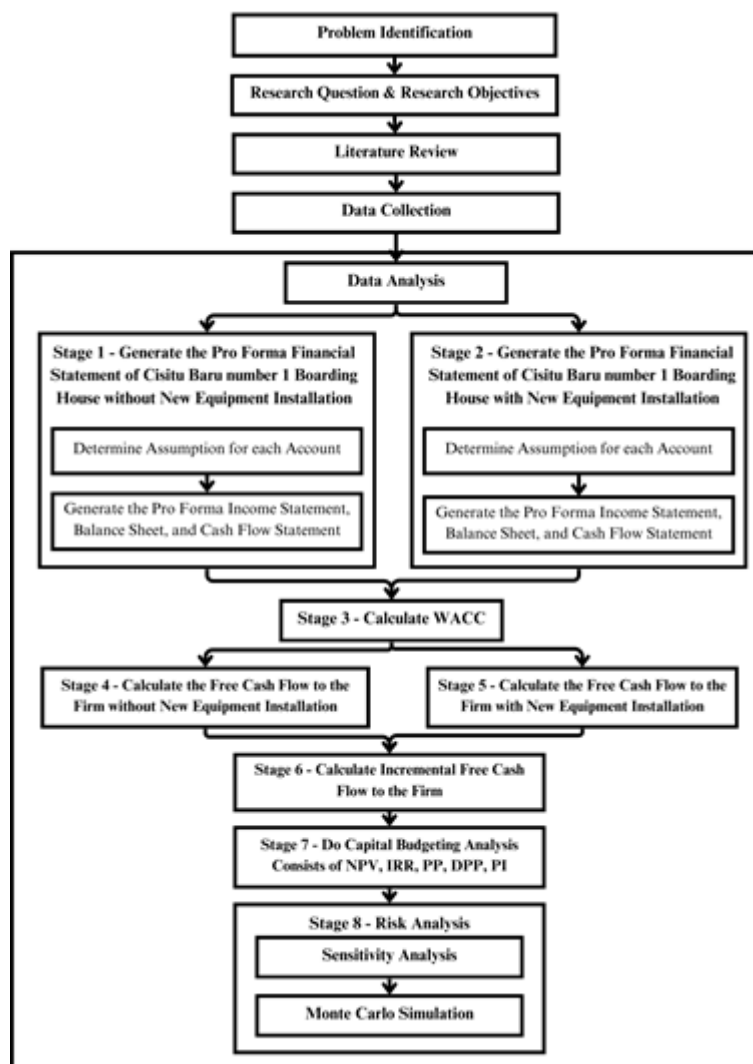


Figure 1. Research Design

Data collection is one step in the process of research that becomes an important aspect in research. Data collection means a process of collecting data and information accurately from primary and secondary data sources that can be useful to answer and solve the research question. By doing data collection, the author can make the capital budgeting analysis include the risk analysis, so the company can determine whether the project that has been proposed is accepted or rejected. As mentioned earlier, there are two types of data. The first one is the primary data sources and the second one is secondary data sources. There are some differences between those two sources.

RESULTS AND DISCUSSION

Financial Feasibility Analysis

Stage 1 - Generate the Pro Forma Financial Statement of Cisu Baru Number 1 Boarding House without New Equipment Installation

There are 2 steps in order to construct the Pro Forma Financial Statement of Cisu Baru number 1 boarding house without new equipment installation. It consists of determining the assumption for each account and also determining the Pro Forma

Income Statement, balance sheet, and cash flow statement of Cisitu Baru number 1 boarding house.

Determine the Assumption for Each Account

In order to determine the assumption of each account, the author uses primary and secondary data that was already collected before. The data that is used to determine each assumption is based on the historical data of Cisitu Baru number 1 boarding house, interviews with the owner of Cisitu Baru number 1 boarding house, and also the manager that works in Cisitu Baru number 1 boarding house. By having this step, the next step which is to determine the Pro Forma Financial Statement can be constructed. It becomes the fundamental assumption that drives the future Pro Forma Income Statement.

Determine the Pro Forma Income Statement, Balance Sheet, and Cash Flow Statement

After determining the assumption for each account in for Pro Forma Financial Statements without new equipment installation, we can make the following Pro Forma Income Statement, Balance Sheet, and also Cash Flow Statement. Based on the calculations, the forecast shows a positive result. The Income Statement, the net profit after tax of Cisitu Baru number 1 boarding house always shows a positive value which is always above IDR 200,000,000.00 per year. Moreover, they always have additional retained earnings that are above IDR 150,000,000.00 each year. Then for the balance sheet, Cisitu Baru number 1 boarding house always has a greater retained earnings year by year. Furthermore, for the cash flow statement, Cisitu Baru number 1 boarding house always has a positive cash flow each year. In conclusion, Cisitu Baru number 1 boarding house is a profitable company based on the forecast that was already made using the assumption that was already constructed before.

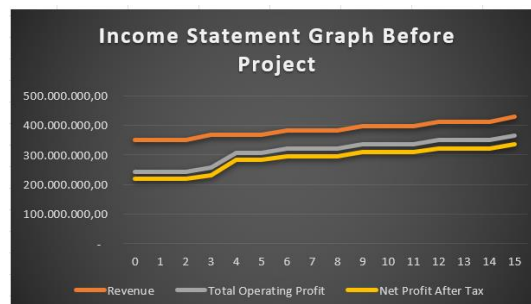


Figure 2. Income Statement Graph Before Project

Source: Income Statement Calculation

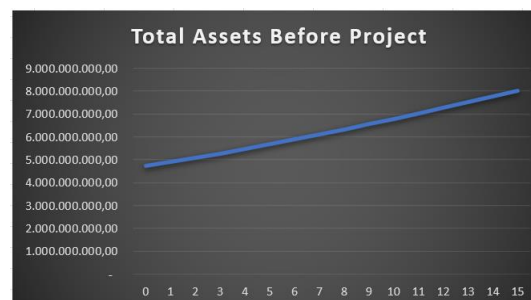


Figure 3. Total Asset Before Project

Source: Balance Sheet Calculation

Stage 2 - Construct the Pro Forma Financial Statement of Cisititu Baru number 1 boarding house with New Equipment Installation

In stage 2, there are two steps that should be determined in order to construct the Pro Forma Financial Statements of Cisititu Baru number 1 boarding house with new equipment installation. The first step in this stage is determining the assumption for each account. This step becomes an important step for the next step, because this step is the fundamental in forecasting in step two. The second step is constructing the Pro Forma Financial Statements that include Income Statement, Balance Sheet, and Cash Flow Statement of Cisititu Baru number 1 boarding house with new equipment installation.

Determine the Assumption for Each Account

In determining the assumption for each account in this stage, the author uses some data that have been collected from primary data and also secondary data. For the primary data, the author was collected from doing an interview with some people that can be a key person. The key person that have been interviewed is Mr. Kevin as the owner of Cisititu Baru number 1 boarding house, Mrs. Imah as the manager in Cisititu Baru number 1 boarding house, Mr. Donny as the resident of Cisititu Baru number 1 boarding house, Mr. Wawan as the plumber expert, Mrs. Miraayu, Mr. Dudung, and Mr. Denny as the manager of A, B, and C boarding house. All of this information that obtained from the interview can be a fundamental assumption for Income Statement forecast. On the other hand, to forecast the Balance Sheet of Cisititu Baru number 1 boarding house, the author uses historical data from the company.

Determine the Pro Forma Income Statement, Balance Sheet, and Cash Flow Statement

After the step 1 which is determining the assumption for each account, the Pro Forma Financial Statements can be constructed. The Financial Statements that can be constructed are the Pro Forma Income Statement, Pro Forma Balance Sheet, and Pro Forma Cash Flow statement. By having a great fundamental in the previous step, the Pro Forma Financial Statement can be constructed greatly. For Pro Forma Income Statements with new equipment installation, the net profit after tax and additional retained earnings is greater than the Pro Forma Income Statement without new equipment installation. It can happen because the price of the boarding house is increasing while the cost is quite stable and the added electricity cost is quite small. Then the Pro Forma Balance Sheet showed a lot of cash and retained earnings from the company. Moreover, the fixed assets of the company also increased due to the equipment installation. For the cash flow statement, Cisititu Baru number 1 boarding house always generates positive cash flow and the ending cash balance of the Pro Forma Cash Flow statement with new equipment installation is always greater than the Pro Forma Cash Flow statement without new equipment installation. To sum up, the Pro Forma Financial Statement of Cisititu Baru number 1 boarding house with new equipment installation is greater than the Pro Forma Financial Statement of Cisititu Baru number 1 boarding house without new equipment installation based on the assumption that has already been determined.

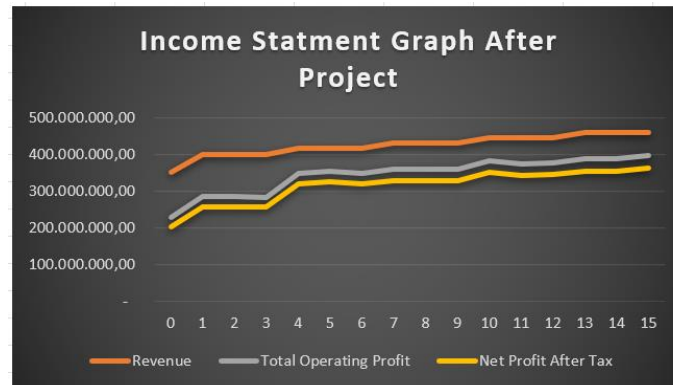


Figure 4. Income Statement Graph After Project
Source: Income Statement Calculation



Figure 5. Total Assets After Project
Source: Balance Sheet Calculation

Stage 3 - Calculate the Weighted Average Cost of Capital

In stage 3, there are two steps in order to calculate the Weighted Average Cost of Capital. The first step is calculating the cost of equity of Cisitu Baru number 1 boarding house. The second step is to calculate the Cost of Debt of Cisitu Baru number 1 boarding house. Mr. Kevin said that Cisitu Baru number 1 boarding house does not want to use any debt financing source. Therefore, the cost of capital that should be determined is the cost of equity of the firm using the Capital Asset Pricing Model.

In order to calculate the cost of equity of Cisitu Baru number 1 boarding house, the company should determine the comparable company that has the same industry and income source. Moreover, the comparable company should be listed in the stock market so the beta of the firm can be determined. Cisitu Baru number 1 boarding house only has one income source which is rental room services. Therefore, the comparable company should run in the same industry which is rental room services. The author chose PT Royalindo Investa Wijaya Tbk. (INDO) as the comparable company because PT Royalindo Investa Wijaya Tbk. (INDO) runs in the same industry which is the rental room services. According to Yahoo Finance, the beta of PT Royalindo Investa Wijaya Tbk. (INDO) is 0,84 and 0,0011 of debt ratio. This data is retrieved from Financial Statements of PT Royalindo Investa Wijaya Tbk. (INDO) quarter 3 year 2023. Therefore, the beta of PT Royalindo Investa Wijaya Tbk. (INDO)

can be the comparable company to determine the levered beta of Cisititu Baru number 1 boarding house.

$$\beta_{Unlevered} = \frac{\beta_{Levered}}{(1 + (1 - TC) * (\frac{Long Term Debt}{Equity}))}$$

Table 1. Beta Unlevered Calculation Table

Company	Beta Levered (β)	Debt Equity Ratio (DER)	Tax Rate	Beta Unlevered
PT Royalindo Investa Wijaya Tbk (INDO)	0,84	0,0011	22%	0,8393

Source: <https://finance.yahoo.com/>

By this calculation, the beta levered of Cisititu Baru number 1 boarding house is 0,8393. It can be the same as the beta unlevered of PT Royalindo Investa Wijaya Tbk (INDO) because Cisititu Baru number 1 boarding house does not have any long term debt. Therefore, the debt equity ratio of Cisititu Baru number 1 boarding house will be 0 and it will not affect the unlevered beta of PT Royalindo Investa Wijaya Tbk (INDO).

After the beta levered of Cisititu Baru number 1 boarding house has already been constructed, then calculate the risk free rate and market return of Indonesian stock market. These three components will be fundamental in calculating the Capital Asset Pricing Model. According to the Indonesian Bond Pricing Agency (IBPA), the risk free rate of Indonesia is 6,564% based on 10 years Indonesian Government Bond Yield because it can represent a stable long term investment that expected by the investors. Furthermore, the market return of the Indonesian stock market is 18,73% (Global Economy, 2021). Then the calculation of the cost of equity of Cisititu Baru number 1 boarding house can be determined.

$$\begin{aligned} \text{CAPM} &= R_f + \beta * (R_m - R_f) \\ &= 6,54\% + 0,8393 * (18,73\% - 6,54\%) \\ &= 16.77\% \end{aligned}$$

The Cost of Equity of Cisititu Baru number 1 boarding house is 16.77% based on the calculation above. Moreover, Mr. Kevin said that Cisititu Baru number 1 boarding house will not use any debt financing source and he will use 100% equity financing. Therefore, if the cost of debt use BRI Micro Credit with 14% cost of debt and the debt weight is 0%, then the Weighted Average Cost of Capital will be same as the cost of equity.

Table 2. Weighted Average Cost of Capital Calculation Table

Financing Source	Cost	Weighted	Weighted Cost
Cost of Equity	16.77%	100%	16.77%
Cost of Debt	14%	0%	0%
Weighted Average Cost of Capital			16.77%

Source: Result of Cost of Equity and Cost of Debt Calculation

Stage 4 - Calculate the Free Cash Flow to the Firm without New Equipment Installation

After calculating the Weighted Average Cost of Capital of the Cisititu Baru number 1 boarding house, the Free Cash Flow to the Firm can be generated. It is important to determine the Weighted Average Cost of Capital because it will be the discount rate that is applied in the Free Cash Flow to the Firm calculation. Moreover, the author uses Free Cash Flow to the Firm as the Free Cash Flow rather than Free Cash Flow to Equity because Free Cash Flow to the Firm represents the cash available for all investors which include the debt and equity holders. Therefore, the Free Cash Flow to the Firm is a more comprehensive cash flow rather than the Free Cash Flow to Equity. On the other hand, Cisititu Baru number 1 boarding house use all equity financing, which the Free Cash Flow to the Firm and Free Cash Flow to Equity will generate the same result. The Free Cash Flow to the Firm should be calculated each year and in the last year, the company should also calculate the terminal cash flow. Further detailed result of Free Cash Flow to the Firm of Cisititu Baru number 1 boarding house without new equipment installation can be seen in figure 4.8 and for detail calculation in Appendix 12. Here below is the calculation of terminal value of Cisititu Baru number 1 boarding house without new equipment installation using the Free Cash Flow to the Firm at period 15 (CF15), rental room services growth rate (g), and also Weighted Average Cost of Capital (r).

$$\begin{aligned}
 \text{Terminal Value} &= \frac{CF_{15}(1+g)}{(r-g)} \\
 &= \text{IDR } 333,256,091.57 * \frac{(1+2,99\%)}{(16,77\%-2,99\%)} \\
 &= \text{IDR } 2,489,861,145.87
 \end{aligned}$$

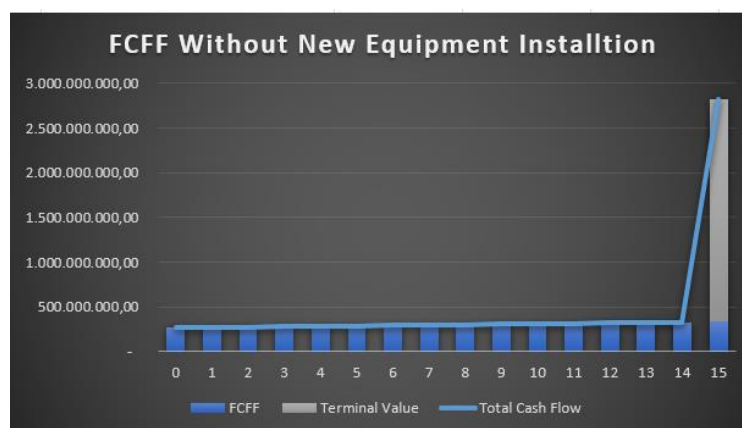


Figure 6. Cisititu Baru Number 1 Boarding House Free Cash Flow to the Firm without New Equipment Installation Project

Source: Free Cash Flow to the Firm without New Equipment Installation Project

Stage 5 - Calculate the Free Cash Flow to the Firm with New Equipment Installation

In stage 5, the calculation will be the same as in stage 4. The Free Cash Flow to the Firm in stage 5 also needs to calculate the Free Cash Flow to the Firm each year and the terminal cash flow at the end of the project period. The differences are just the Free Cash Flow to the Firm in stage 5 using the new equipment installation, while the Free Cash Flow to the Firm in stage 4 without new equipment installation. For

further calculations of Free Cash Flow to the Firm with new equipment installation in Appendix 13. Here below is the calculation of the terminal value of Cisititu Baru number 1 boarding house with new equipment installation.

$$\begin{aligned}
 \text{Terminal Value} &= \frac{CF_{15}(1+g)}{(r-g)} \\
 &= \text{IDR } 333,593,564.82 * \frac{(1+2,99\%)}{(16,77\%-2,99\%)} \\
 &= \text{IDR } 2,492,382,514.74
 \end{aligned}$$

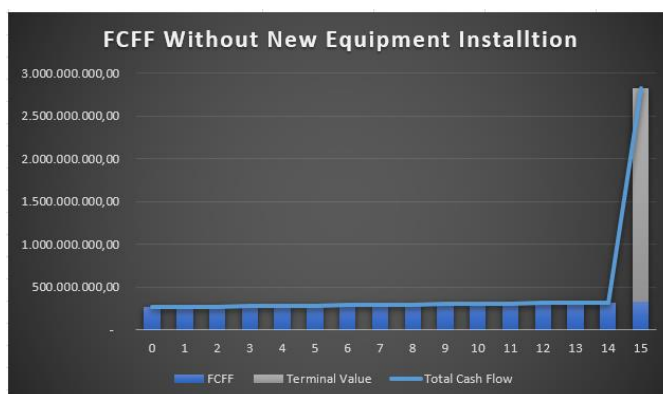


Figure 7. Cisititu Baru Number 1 Boarding House Free Cash Flow to the Firm with New Equipment Installation Project

Source: Free Cash Flow to the Firm with New Equipment Installation Project

Stage 6 - Calculate the Incremental Free Cash Flow to the Firm

After calculating the Free Cash Flow to the Firm without new equipment installation and Free Cash Flow to the Firm with new equipment installation, the incremental Free Cash Flow to the Firm of Cisititu Baru number 1 boarding house can be generated. In order to calculate the incremental Free Cash Flow of a firm, calculate the difference between the Free Cash Flow with the project and the Free Cash Flow without implementing the project. In this case, the calculation of incremental Free Cash Flow can be determined by subtracting or finding the differences between the total Free Cash Flow to the Firm with new equipment installation with the total Free Cash Flow to the Firm without new equipment installation.

Table 3. Cisititu Baru Number 1 Boarding House Incremental Free Cash Flow to the Firm

Year	Total Cash Flow With Project	Total Cash Flow without Project	Incremental Free Cash Flow to the Firm
0	IDR 147,044,144.40	IDR 269,266,144.40	IDR 122,222,000.00
1	IDR 312,521,235.35	IDR 269,112,364.40	IDR 43,408,870.95
2	IDR 319,763,392.26	IDR 268,958,584.40	IDR 50,804,807.86
3	IDR 319,609,612.26	IDR 280,252,838.60	IDR 39,356,773.66
4	IDR 330,660,683.68	IDR 282,394,052.60	IDR 48,266,631.08
5	IDR 296,742,908.28	IDR 282,240,272.60	IDR 14,502,635.68
6	IDR 318,496,615.23	IDR 293,522,479.23	IDR 24,974,136.00
7	IDR 343,623,555.43	IDR 295,663,693.23	IDR 47,959,862.19
8	IDR 345,698,693.91	IDR 295,509,913.23	IDR 50,188,780.67
9	IDR 345,544,913.91	IDR 306,779,773.60	IDR 38,765,140.31
10	IDR 320,072,967.28	IDR 308,920,987.60	IDR 11,151,979.68
11	IDR 358,651,770.53	IDR 308,767,207.60	IDR 49,884,562.93

12	IDR 343,963,246.82	IDR 320,024,415.60	IDR 23,938,831.21
13	IDR 369,934,586.62	IDR 322,165,629.60	IDR 47,768,957.01
14	IDR 371,594,809.18	IDR 322,011,849.60	IDR 49,582,959.58
15	IDR 2,825,976,079.56	IDR 2,823,117,237.44	IDR 2,858,842.12

Source: Incremental Free Cash Flow to the Firm Calculation

Stage 7 - Capital Budgeting Analysis

After calculating the incremental Free Cash Flow to the Firm of Cisititu Baru number 1 boarding house, then the capital budgeting analysis can be constructed. There are 5 tools that can be used to do capital budgeting analysis. There are Payback Period, Discounted Payback Period, Net Present Value, Profitability Index, and also Internal Rate of Return. These capital budgeting tools will help the company to determine whether the company will execute the project that will be profitable in the future, or the company will reject the project due to losses in the future. Based on the calculation, the Payback Period of the Cisititu Baru number 1 boarding house project is 2.71 years with 3.89 years for the Discounted Payback Period. On the other hand, the Net Present Value is IDR 87,166,396.20 and the Profitability Index is 1.71. It indicates that the project will be profitable in the future. Moreover, the Internal Rate of Return is 33%, which is greater than the Cost of Capital of the project. The Internal Rate of Return can be quite high because the project only replace the furniture and install the water heater. Based on the capital budgeting that has been already made, the project of Cisititu Baru number 1 boarding house new equipment installation is feasible and can be accepted.

Table 4. Financial Feasibility Analysis Table

Financial Feasibility Tools	Value	Decision Criteria	Conclusion
Payback Period	2.71	Below 10 Years (Maximum Payback Acceptance based on the owner preference)	Feasible
Discounted Payback Period	3.89	Below 10 Years (Maximum Payback Acceptance based on the owner preference)	Feasible
Net Present Value	IDR 87,166,396.20	Positive Value	Feasible
Profitability Index	1.71	Above 1	Feasible
Internal Rate of Return	33%	Above Cost of Capital (16.77%)	Feasible

Source: Financial Feasibility Calculation from Free Cash Flow to the Firm

Stage 8 - Risk Analysis

After capital budgeting analysis is already made, then the project also should assess the risk, because each project will have a different risk. In assessing the risk of Cisititu Baru number 1 boarding house new equipment installation project, the author uses two tools which are sensitivity analysis and Monte Carlo simulation. The first tool that will be used is sensitivity analysis. By having sensitivity analysis, the company could know which input variables have a significant effect on the output variables. It is important to determine it, so the company can be more focused on those variables with significant effect on the output. There are 53 variables in sensitivity analysis, but there are some variables that do not have impact on the Net Present

Value changes. In table 7 can be seen as the 38 variables that have an impact on the Net Present Value changes. Here below is the detail of the sensitivity analysis.

Table 5. Sensitivity Analysis

Variables	Variable Decrease		Variable Increase	
	Variable Changes	NPV Changes	Variable Changes	NPV Changes
Electricity and water cost (Full Occupied)	-10%	3%	10%	-3%
Below 100% Occupied Rooms	-10%	-1%	10%	1%
Added Electricity cost	-10%	-1%	10%	1%
Expected Rainy Month from 2023-2039	-10%	-2%	10%	2%
Below 100% occupied rooms	-10%	-2%	10%	2%
Full Occupied before project except holiday season	-10%	-10%	10%	10%
Full Occupied After project except holiday season	-10%	-10%	10%	10%
Below 100% Occupied before Project	-10%	-10%	10%	10%
Below 100% Occupied After Project	-10%	-10%	10%	10%
Occupancy Rate Jun Before Project	-10%	-11%	10%	11%
Occupancy Rate Jul Before Project	-10%	-11%	10%	11%
Full Occupied before project	-10%	-11%	10%	11%
Full Occupied After Project	-10%	-11%	10%	11%
Occupancy Rate Jun After Project	-10%	-12%	10%	13%
Occupancy Rate Jul After Project	-10%	-12%	10%	11%
Occupancy Rate Jan Before Project	-10%	-13%	0%	0%
Occupancy Rate Feb Before Project	-10%	-13%	0%	0%
Occupancy Rate Mar Before Project	-10%	-13%	0%	0%
Occupancy Rate Apr Before Project	-10%	-13%	0%	0%
Occupancy Rate May Before Project	-10%	-13%	0%	0%
Occupancy Rate Aug Before Project	-10%	-13%	0%	0%
Occupancy Rate Sep Before Project	-10%	-13%	0%	0%
Occupancy Rate Oct Before Project	-10%	-13%	0%	0%
Occupancy Rate Nov Before Project	-10%	-13%	0%	0%
Occupancy Rate Dec Before Project	-10%	-13%	0%	0%
Occupancy Rate Aug After Project	-10%	-13%	10%	13%
Occupancy Rate Apr After Project	-10%	-14%	10%	9%
Occupancy Rate May After Project	-10%	-14%	10%	9%
Occupancy Rate Jan After Project	-10%	-15%	0%	0%
Occupancy Rate Feb After Project	-10%	-15%	0%	0%
Occupancy Rate Mar After Project	-10%	-15%	0%	0%
Occupancy Rate Sep After Project	-10%	-15%	0%	0%
Occupancy Rate Oct After Project	-10%	-15%	0%	0%
Occupancy Rate Nov After Project	-10%	-15%	0%	0%
Occupancy Rate Dec After Project	-10%	-15%	0%	0%
Current Boarding House Price	-10%	-139%	10%	159%
Future Boarding House Price	-10%	-159%	10%	139%

Source: Sensitivity Analysis Calculation

There are 38 variables that have an impact on the NPV if those variables change. Based on the table above, there are 2 variables that have a greater NPV changes rather than the increase or decrease of percentage value for sensitivity. The first variable is the price of the boarding house, because when the boarding house price decreases by 10%, it can impact the NPV by -139%. On the other hand, when the boarding house price increase by 10% it will make the NPV increase by 159%. The

second variable is occupancy rate. When the occupancy rate decrease by 10% it will decrease the NPV by 11-15%. Therefore, those variables have become the most sensitive variables of this project because the changes on NPV is greater than the changes in the increasement or decrease of the variable. Here below is the tornado analysis.

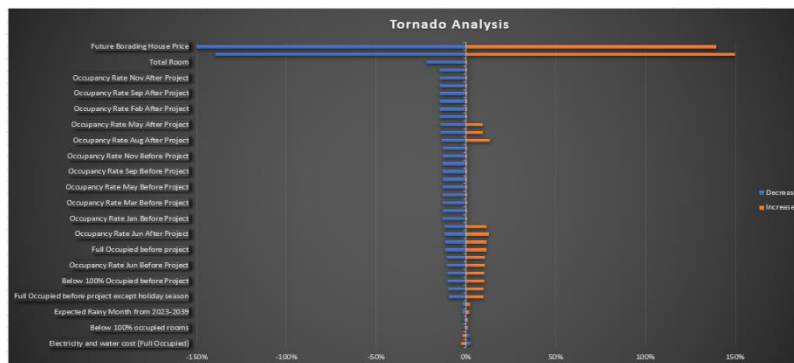


Figure 8. Cisititu Baru Number 1 Boarding House Tornado Analysis

Source: Sensitivity Analysis Table

After calculating the sensitivity analysis, then do the Monte Carlo simulation. In this case, the author uses one thousand simulations or experiments in order to know the probability of Net Present Value changes. Here below is the variables that used as the input for the Monte Carlo Simulation.

Table 6. Monte Carlo Variable Range

Variables		Description	
Price of the Boarding Room	Mean	IDR 1,731,250.00	Since, there is no market history data according to the price of the boarding room in Jalan Cisititu Baru, the price of the boarding room mean and standard deviation is based on the price of boarding room in Jalan Cisititu Baru boarding houses area that have been research by the author include Cisititu Baru number 1 boarding house, A boarding house, B boarding house, and C boarding house.
	Standard Deviation	IDR 274,905.	
Occupancy Rate	Minimum	82%	Since, there is no market history data about occupancy rate, the author use the occupancy rate that have been collected through some boarding houses in Jalan Cisititu Baru boarding house area that consist of Cisititu Baru number 1 boarding house, A boarding house, B boarding house, and C boarding house.
	Base	95%	
	Maximum	100%	

Source: Monte Carlo Simulation

After determining the variables that will be used in the Monte Carlo Simulation, then the simulation can be run by one thousand times and here below is the result:

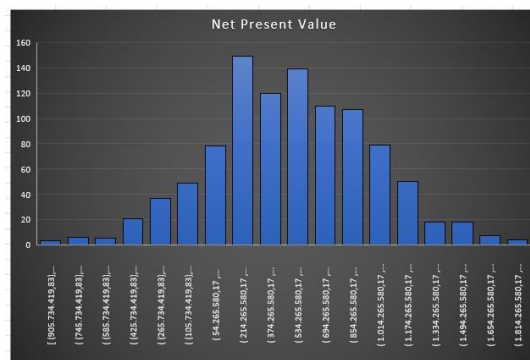


Figure 9. Monte Carlo Simulation Diagram
Source: Monte Carlo Simulation

After the simulation, the conclusion can be made. The conclusion for Monte Carlo simulation consists of 8 variables which are the minimum value, maximum value, mean value, standard deviation, median value, kurtosis, skewness, and also the probability of the Net Present Value below 0. Based on the conclusion, the minimum value of this simulation is minus IDR 905,734,419.83 with the maximum value of IDR 1,946,483,533.88 and the mean value of IDR 579,724,163.39. Moreover, the standard deviation is IDR 463,503,563.41 with the median of IDR 576,018,338.04. On the other hand the kurtosis of this project is 0,04 with 0,01 skewness and 1,10% probability the NPV below 0. In conclusion, there is a low probability of the project reach below 0 NPV which is 1,10%.

Table 7. Monte Carlo Simulation

Descriptive Statistics	
Minimum	IDR 905,734,419.83
Maximum	IDR 1,946,483,533.88
Mean	IDR 579,724,163.39
Standard Deviation	IDR 463,503,563.41
Median	IDR 576,018,338.04
Kurtosis	0,04
Skewness	0,01
Probability NPV below 0	1,10%

Source: Monte Carlo Simulation Calculation

CONCLUSION

Cisitu Baru number 1 boarding house is a company that runs the rental room services, specifically in the boarding house industry. Currently Cisitu Baru number 1 boarding house has 26 rooms that are rented monthly and the price for each month is about IDR 1,150,000.00. Cisitu Baru number 1 boarding house is located in Jalan Cisitu Baru, Bandung City. This company only has one revenue source which is the rental room. Moreover, Mr. Kevin as the owner said that this boarding house needs some improvement in facilities such as installation of water heater and also replacement of the equipment such as bed, pillow, chair, and desk. By benchmarking with another boarding house around Jalan Cisitu Baru, Mr. Kevin also sees that his boarding house has a gap between the benchmarks. Therefore it is

important and crucial to increase the facilities of the boarding house in order to compete with the boarding house around Jalan Cisititu Baru.

There are some improvements of facilities in this project. The project consists of some equipment that must be installed in the boarding house to compete with the other boarding house in Jalan Cisititu Baru. These equipment consist of 2 units of solar water heater with 300 liter, installation for pipe heat water, mixer faucet, brass faucet stop, 226 pump and pressure control, half PPC pipe and accessories. Moreover, for improvement in furniture consist of a bed, pillow, chair, and desk for 26 rooms. In total, the initial investment of this project is about IDR 122,222,000.00.

According to chapter 4, there are some tools that have been used to analyze whether the project that Cisititu Baru number 1 boarding house has been proposed can be accepted or rejected. The tools that have been used are Payback Period, Discounted Payback Period, Net Present Value, Profitability Index, and Internal Rate of Return. Based on the calculation in chapter 4, the Payback Period of Cisititu Baru number 1 boarding house new equipment installation project is 2.71 years, followed by 3.89 years for the Discounted Payback Period. From the Payback Period and Discounted Payback Period tools, it indicates that the project is feasible because the maximum acceptance Payback Period is below 10 years based on Mr. Kevin. Moreover, there are some tools to assess the profitability of the project which are Net Present Value and also Profitability Index. The Net Present Value of the project is IDR 87,166,396.20 and followed by 1.71 as the value of Profitability Index. It shows that the project will generate profit in the future. On the other hand, the Internal Rate of Return value is 33% which is larger than the WACC as the cost of capital value which is 16.77%. Furthermore, there is some sensitive input variable in the sensitivity analysis which are the boarding house price and occupancy rate, but there is a low probability that the net present value will be below zero 1,10% according to the Monte Carlo simulation. After all of the calculation and the capital budgeting analysis, the Cisititu Baru number 1 boarding house new equipment installation is feasible and can be accepted due to all capital budgeting tools.

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