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FEASIBILITY STUDY OF APARTMENT PROJECT OF PT XYZ

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Abstract. Reflecting on the increase in the number of expatriates that work in one of the townships located in Bekasi regency, adequate residential that close to the workplace is preferably needed for them. Therefore PT XYZ, one of the property developer company in Bekasi regency have an idea to increase their income source by developing a new residential in the form of the apartment with an international standard design to satisfy the need of expatriate to work, live, do business, and enjoying their life in the same area. Since the company needs a large of fund to finance this project, the company need to conduct a feasibility analysis of this project to know this investment project worth doing or not for future investment. Throughout the paper, the author wants to assess the feasibility study based on financial aspect using capital budgeting techniques, which are Net Present Value, Internal Rate of Return, Payback Period, and Profitability Index. In addition, the risk analysis needs to be conducted by using the sensitivity analysis, scenario analysis, and Monte Carlo simulation. The result shows this investment project is worth doing as a future investment with very low risk.

Keywords: Feasibility Study; Apartment; Property; Investment Project

INTRODUCTION

A large increase in the number of population can open opportunities for the region to be able to drive economic development more quickly. To support the acceleration of economic development, one of the company in Bekasi regency together with local governments, strategic partners and likeminded multinationals would like to unlock the capability of Indonesia by creating new cities for growth, a matured and independent city or most of the people known as a township. They have an idea to develop this township to become "one-stop smart living", where residents can work, live, do business, and enjoying their life in the same area. The advancement of this independent city to become "one-stop smart living" area it additionally ought to be bolstered by the existence of appropriate residential. Residential that close to the workplace is preferably for the people who work in this area. Currently, there are more than 10.000 expatriates work in this township that are coming from various countries.

Recently, there is an increasing demand for commercial property specifically on the apartment in Jabodetabek area, but the supply of the apartment still in the below of its demand. By observing those potential, PT XYZ has an idea to satisfy the needs of the community exclusively for the expatriates that always increasing from year to year. The company will continue to develop residential projects with new concepts by considering the design and construction of buildings that can attract many consumers, especially for the expatriate. Fundamental discoveries from literature review proposed that arranged community concept, security, and glory decides purchaser inclinations to buy a particular residential product, while from the investigation with property developer, they stated that a design, accessibility, facilities, and brand additionally impacted the price of the item (Rahadi, Wiryono, Koesrindartoto & Syamwil, 2012). One of the factors that stated before is concept; therefore the company wants to build a premium apartment with a special concept from the aspect of architectural, interior design, building quality, service quality, and food & beverage that are according to international standards concept.

The implementation of this idea makes PT XYZ need to collect big amount of money to develop this premium apartment by using debt and equity. Even though the current condition in this area have a good opportunity for the company to do this project, PT XYZ still needs to do the feasibility study to determine whether this project is feasible or not to be implemented. This research wants to conduct a feasibility study of PT XYZ's new project based on the financial aspect.

LITERATURE REVIEW

Feasibility Study

The concept of feasibility study includes conducting investigations and assessment of complex nature at the level of the future investment objective, did on specific time horizon, and need to consider the factors of risk and vulnerability (Brâncusi, 2015). Majura (2019) stated the meaning of feasibility in the financial sense primarily compares costs and revenues for a firm. The firm can use capital budgeting analysis methods to analyze the financial feasibility of developing and launching a new product (Kampira, 2018).

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Capital Budgeting

Capital budgeting can be defined as the process of analyzing and choosing the best investment in assets that can generate benefit for more than one year, that might be in the form of new project development, grow the existing firm, and acquire new fixed assed (Peterson & Fabozzi, 2002; El-Sharkawy, 2005). Kahraman (2008) stated that there are a lot of financial parameters for capital budgeting and the most common use are Net Present Value (NPV); Internal Rate of Return (IRR); Payback Period (PB); and Profitability Index (PI).

Net Present Value

Net Present Value (NPV) is an expected return from the investor on their money that they provide for a firm by considering the time value of money, therefore the firm ought to attempt an investment just if the present value of the cash flow that the investment produces is more prominent than the cost of making the investment in the first place (Gitman & Zutter, 2012). A positive NPV demonstrate that the project needs to be accepted, while a negative NPV shows that the project needs to be rejected.

Internal Rate of Return

Internal Rate of Return (IRR) is setting the NPV equivalent to zero and find the discount rate that gives this equality. If the return exceeds the cost of the funds used to finance the project, then the difference is a bonus that goes to the firm's stockholders (Titman, Keown, and Martin, 2018). Therefore, the decision maker needs to accept the project if the IRR is greater than the cost of capital and reject the project if IRR is smaller than the cost of capital.

Payback Period

The payback period method of financial appraisal is used to determine return per year from the beginning of the project until the accumulated returns are balanced to the cost of investment at which time the initial investment is determined to have been paid back (Cooper et al. 2001). The project needs to be accepted if the payback period is shorter than the maximum payback period designated by management.

Profitability Index

The Profitability Index (PI) gives a rough measure of NPV of the firm gets for every dollar it contributes (Damodaran, 2012). Accept the project if PI more than one and reject the project if PI is smaller than one.

Capital Budgeting Cash Flow

The ideal approach to measure the costs and benefits of capital budgeting opportunity is using a Free Cash Flow (Malekian, 2009). There are two methods of using free cash flow which are free cash flow to the firm (FCFF) which is the cash flow that is available to the debt and equity holders and the other one is free cash flow to the equity (FCFE) which is the cash flow that available to the equity holders only (Steiger, 2008), this research will use FCFF method since the company use debt and equity to finance the project. The cash basis method has become the standard method for property businesses, except the landowners opts out or has rental payments over the threshold (Potton, 2017). Future stream of cash flow needs to expect in the property industry only by estimate the future revenues and expenditures for the project, period by period (Geltner & Neufville, 2018).

Weighted Average Cost of Capital

Pandey (2015) stated that the project's cost of capital is a measurement tool that will indicate the firm's minimum required rate of return on funds, which depends on the riskiness of its cash flow. Many companies utilized the mix of debt and equity to funds their businesses or projects and the overall cost of capital is gotten from a weighted average of every capital sources, known as the weighted average cost of capital (WACC). WACC is calculated by multiplying the cost of equity and debt with its weight and adding together the weighted values.

Risk Analysis

The term risk in capital budgeting represents the variability in the actual returns emanating from a project during the working life (Khan & Jain, 2007). Sensitivity analysis is a behavioral approach that uses a number of possible value for a given variable to assess its impact on firm's return, in order to see the sensitive variables (Mun, 2002). Sensitivity analysis only consider one parameter at a time, however all parameters can vary together, by using scenario analysis the company can overcome this issue by considering all parameters together to get the effect of the extreme case which are optimistic, most likely, and pessimistic condition (Dayananda et al., 2002; Hardygóra et al., 2004). Monte Carlo simulation is typically connected with the process of modelling and simulating a framework that influenced by randomness: several random scenarios are generated, and relevant statistics are gathered in order to assess (Brandimarte, 2014).

METHODOLOGY

The primary data collection is by doing the in-depth interview in order to make the assumptions with the PT XYZ's representative who serves as the business development manager, which have a responsibility in examining this project development. Furthermore, the researcher also finds secondary data to support this research, such as journals and books. The data analysis will explain the process of data after all of the required data have been successfully collected. Begin with constructing cash flow

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stream, which explains about the incomings and outgoings of cash that represent the operating activities of an organization. To construct the cash flow stream, the assumption of each account should be determined first. After the assumption has been made, the monthly cash flow stream must be made order to make yearly cash flow. Afterward WACC need to be calculate as a discount rate, followed by determine total cash flow to conduct feasibility analysis of a project using capital budgeting by calculate four principles criteria, which are Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP), and Profitability Index (PI).

FINDINGS AND ARGUMENT

Forecasted Yearly Cash Flow Stream

The income of this project is based on the selling of 350 units of the apartment with several types of unit which are one bedroom, two bedrooms, and three bedrooms with the number of units are 30 units, 205 units, and 115 units respectively. The company has a plan to sell the apartment per square meter with IDR 22,579,626. There will be a 5 year projection for the yearly cash flow because the company forecast that this project will end in the fifth year.

Table 1. Projected Yearly Cash Flow Stream (in a million)

Year	0	1	2	3	4	5
Sales Cash In	-	63,582	117,382	15,737	247,223	66,392
Land Cost	32,100					
Construction Cost		22,550	118,970	118,970	49,571	
Development Cost	22,879	54,874	15,387	8,425	3,582	2,280
Total Cost	54,979	77,424	134,358	127,396	53,153	2,280
Final Tax	-	1,589	2,934	3,893	6,180	1,659
Net After-Tax Cash Flow	(54,979)	(15,432)	(19,910)	24,447	187,889	62,452
Cummulative After-Tax Cash Flow	(54,979)	(70,411)	(90,321)	(65,874)	122,015	184,567

Total Cash Flow

There are three aspects needed to calculate the free cash flow to the firm which are operating cash flow, net capital expenditure, and change in net working capital. Since the company uses a cash basis method for the cash flow, free cash flow to the firm only consist of net after-tax cash flow and the company did not have a terminal cash flow due to the project of the apartment will be finished in the year five.

Table 2. Projected Total Cash Flow (in million)

Year	0	1	2	3	4	5
Net After-Tax Cash Flow	(54,979)	(15,432)	(19,910)	24,447	187,889	62,452
Terminal Cash Flow						-
Total Cash Flow	(54,979)	(15,432)	(19,910)	24,447	187,889	62,452
Total Cash Flow Accumulation	(54,979)	(70,411)	(90,321)	(65,874)	122,015	184,567

Weighted Average Cost of Capital

- Weight of Equity and Weight of Debt
  PT XYZ have been decided to use equity that amounts to IDR81,336,000,000, while the company using debt to fund this project with IDR 15,000,000,000, therefore the weight of equity is 84.4%, and weight of debt is 15.6%.
- Cost of Equity
  The cost of equity can be found by using the Capital Asset Pricing Model (CAPM). Since PT XYZ is a private company; the company needs to calculate the beta industry unlevered by do an adjustment by removing the effect of debt from the formula. The beta average unlevered of the project is 0.5307, then the beta firm levered is 0.63. The calculation for CAPM needs four compenent, which are levered beta, risk-free rate, market return, and corporate tax. The risk free-rate is obtained from the average 5-years Indonesia Government Bond Yield's rate that issued on May 22nd 2019, which

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is 7.6%. Then, the market return is obtained from the data gathered from the Indonesia Stock Exchange to determine the average of Jakarta Composite Index rate of return with the result is 16.76%.

$$CAPM = r_f + \beta (r_m - r_f) = 7.6\% + 0.63\ (16.76\% - 7.6\%) = 13.36\%$$

- Cost of Debt
  The interest rate from construction loan is 13% using Bank BTN. Since the company has applied a final tax, consequently the company did not have to pay a corporate income tax. Then, the total after tax cost of debt is 13%.

Therefore based on the several calculations above, the weighted average cost of capital of this project would be 13.30%

Net Present Value
Each year's discounted cash flow will be cummulated until the final year using 13.30% as its discount rate. Based on the calculation, the result of NPV for this project is ammount to IDR 80,162,463,555. The project needs to be accepted since the NPV value shows a positive result.
Internal Rate of Return
Microsoft Excel has a specific function to find the IRR with more precise in order to get a discount rate which produces the NPV equal to zero. IRR of this investment project shows a higher number, which is 36.4718336% than its cost of capital (13.30%).
Payback Period
Basen on the accumulated total cash flow, the project estimated to acquire the initial investment in 3 years 4 months 7 days.
Profitability Index
Based on the calculation of profitability index, it shows that the project is still acceptable since its profitability index is amount to 2.458, which exceeds the index of the lowest acceptable value ratio.
Sensitivity Analysis
Sensitivity analysis is used to know which variables of input as measurement components that have a significant impact on the net present value of the project. The sensitivity analysis is done by changing the input variables to increase by 10% and decrease by 10%. There are three variables classified as sensitive variables which are the price of the apartment, quantity sold, and the apartment building cost, since the swing of NPV value is greater than the swing of its input variable swing.
Scenario Analysis
By changing all of the parameters that considered as sensitive variables in one time, the worst case of this project will be generate the NPV of IDR (13,276,524,264), which have a significant different compared to the base case of IDR 80,162,463,555, and for the optimistic condition this project will generate NPV ammount to IDR 131,955,334,445.
Monte Carlo Simulation
After knowing the variables that most sensitive to the NPV, those variables are used for the input in conducting the Monte Carlo Analysis in order to know the distribution of frequency of the variables to the output. The result shows there are 100% probabilities that the NPV will be higher than zero. Since there are no probabilities that NPV is generating a negative value, this investment project considered to has a very low risk.

CONCLUSIONS

This investment project has Net Present Value of the project which amounted IDR 80,162,463,555, which is greater than 0, IRR of 36.4718% rate which is greater than the cost of capital, payback period is 3 years 4 months 7 days which is still below the length of the maximum acceptable payback period that has been determined by management and last is the profitability index is 2.458 which is greater than 1. Based on four indicators of capital budgeting method that have been stated above, all of the indicators were entirely sufficient in satisfying the decision criteria rule as an acceptable project. Therefore this investment project is feasible to conduct for future investment.

Furthermore, based on the sensitivity analysis, the price of the apartment, quantity sold, and apartment building cost are considered as a variable that sensitive to the NPV of the project. According to the Monte Carlo analysis, which utilized the sensitive variables, there are no probabilities that the project NPV is less than zero. Since 100% accumulated probability of NPV is higher than zero, this represents that this investment project has a very low risk.

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