

ASSESSING FINANCIAL FEASIBILITY OF JOINT VENTURE CREATION FOR STEVIA PRODUCTION

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Abstract. The healthy food and behaviour trends have mushroomed in recent years, along with the increase in diabetes patients in Indonesia. PT Mitra Kerinci, a private company in the agricultural sector, see a significant opportunity to produce dried stevia leaves. However, the lack of knowledge, technology advancement and experience of stevia plantation has driven the management consideration to perform under a joint venture of PT XYZ. The research conducts the financial feasibility of PT XYZ to determine the ability of the project in financial aspect. The research will construct pro forma statement and determine capital budgeting cash flow with four techniques that consider the time value of money. The project is considered financially feasible with Net Present Value of IDR 104,531,609,271, the internal rate of return of 18.07%, the project's discounted payback period expected to occur in 5 years 7 months 3 days and profitability index of 2.06. Moreover, the study also involved the risk assessment using the Sensitivity Analysis and Monte Carlo Simulation that shows there are five sensitive variables in the production process will be faced by the firm. Notwithstanding, there is 7.74% probability of generating the negative return, the project still meets the level of acceptance set by PT Mitra Kerinci.

Keywords: Agricultural Sector; Dried Stevia Leaves; Financial Feasibility; Joint Venture; Capital Budgeting

INTRODUCTION

Trends of healthy food and behaviour have mushroomed in recent years, along with the increase of health and wellness concerns (Nielsen, 2015). In support, there were a 26% rises in the number of global high protein food and drink launched (Mintel, 2019). Meanwhile, in Indonesia, the vast increase in nutrition food product category, in one of the biggest e-commerce, four times more in 2018 (Dianawati, 2019). Moreover, there are 10 million diabetes patients and expected to increase up to 21mn people or two times more in 2030 by the World Health Organization (World Health Organization, 2019). With the growing awareness about the effect of sugar on health, sugar substitutes have gained popularity, and sizeable market share (Mordor Intelligence, 2018). The use of low-calorie sweeteners, one of the sugar substitutes, in processed foods, soft drinks and pharmaceuticals is defined as a high-intensity sweetener (HIS) (Khan & Aroulmoji, 2018). According to the composition of Stevia leaves, contains a substance of steviol glycosides, stevia plant can be used as a sugar substitute and categorized as one of the High-Intensity Sweetener (HIS) type (Khan & Aroulmoji, 2018). In Indonesia, the HIS market is expected to reach USD 2.3 billion in 2023 (Mordor Intelligence, 2018) which indicates the business of stevia production has a promising market segment. According to the market opportunity, PT Mitra Kerinci is a limited liability company that focuses on agro-industry segments plan to produce stevia with support of Ha unused land.

However, due to the lack of knowledge, skills and experience in stevia plantation, the plan is considered to perform under joint ventures between PT Mitra Kerinci and PT ABC to carry out the business in the form of new limited liability company of PT XYZ. Moreover, the stevia plantation required some essential resources of land, building a factory, purchase equipment that will generate a significant amount of investment. Provided that, both of the parties decided to fully finance the required assets of the project in the form of shareholders equity, which 45% will be funded by PT Mitra Kerinci and 55% by PT ABC. As both of the firms combining the resources to establishing the project, the earnings generated by the project will also share both of them based on the portion of the initial investment. The research aims to assess the financial feasibility of PT XYZ based on the PT Mitra Kerinci's data with reasonable assumptions with the consideration of risks assessment to achieve the objective of supersizing business segments and increase profit.

LITERATURE REVIEW

Capital Budgeting

Capital Budgeting is the process of evaluating –identify and select- investments in long-lived assets, or assets expected to produce benefits over the years. (Fabozzi & Peterson, 2002) As investing is a part of corporate strategy to maximise shareholder's wealth, capital budgeting is an ongoing process as long as the company still runs the businesses (Ehrhardt & Brigham, 2005).

Net Present Value (NPV)

Net present value (NPV) is one of the favourable methods in capital budgeting used by the investors to evaluate the projects

(Egrhardt & Brigham, 2009). The time value of money applied when the expected future cash inflows discounted to the present value of a project with sufficient required rate of return referred as WACC. Then, the present value will subtract with the initial investment (Sivaruban & Oki, 2018). Projects with positive NPV are accepted since it given the signal of initial investment has recovered, but negative results should be rejected nonetheless (Egrhardt & Brigham, 2009).

Internal Rate of Return (IRR)

A project's internal rate of return (IRR) is the most popular technique in capital budgeting that conveys the rate of return to break-even point of the present value of the net cash inflows to equal the present value of the net cash outflows (Hansen & Mowen, 2006). Once the rate calculated, the decision maker compares the value to require a rate of return of the project and higher result for IRR implies the project is favourable to accept by the investors (Damodaran, 2004).

Discounted Payback period

The discounted payback period is capital budgeting tools that enable the research to assess the period that the firm needs to pay back the investors. With time value of money rules, the period generated of the discounted payback period is higher than the payback period. What is more, the result measures the more extended period takes to recover the investment, the higher the project's risk due to the uncertainty of future cash flow (Ehrhardt & Brigham, 2005).

Profitability Index

The profitability index (PI) is a ratio comparing the present value of a project's net cash inflows to the project's net investment (Sivaruban & Oki, 2018). It indicates the relative gain of the project with the present value of NPV per unit initial investment. If the PI ratio is higher than 1.0, the project may be acceptable. (Ehrhardt & Brigham, 2005).

Capital Budgeting Cash Flow

Cash flows play the critical roles to determine the input for capital budgeting techniques calculation due to the project evaluation involves the calculation of the expected cash inflow and outflows as a result of proposed capital expenditure (Gitman & Zutter, 2003).

Cash Flow

When the firm generates a positive cash flow value, it implies the firm still has cash left after paid the company expenses. A negative value indicates that the firm failed to cover the expenses and investment activities from the operating revenue. In capital budgeting, there are three elements used to calculate cash flow; operating cash flow, net fixed assets investment and changes in net working capital.

WACC

The required rate of return must be fulfilled to the investors as a reward for an initial investment of firm. The WACC reflects the cost of financing for a firm in a given proportion to the different components of financing (Koller, Goedhart, & Wessels, 2010).

Terminal Cash Flow

The terminal cash flow occurred at the end of the project lifetime as a result of the termination and liquidation of the project (Gitman & Zutter, 2003).

Project Risk Assessment

Each project always has a risk that reflects uncertainty about its cash flows (Gitman & Zutter, 2003). One of the project risk assessment methods is sensitivity analysis. However, to get the comprehensive result, monte carlo simulation, as an expanded version of sensitivity, must be conducted to quantify the effect of sensitive variables in the form of probability outcome from 10,000 simulations (Drews, Braatz, & Richard, 2003).

METHODOLOGY

The research classified as applied research with two methods of data collection, the primary data and secondary data which the primary data uses a depth interview and collaborative research with the division of strategic development and investment in PT Mitra Kerinci, which in charge as a reviewer of the whole project plan. The division also gives data related to the business process, capacity production, expected fixed assets, current assets and expenses — the secondary data obtained from reliable sources including journals, country statistics data and books. The research would focus on financial aspects with a risk assessment for the next ten years based on the legal agreement between two parties. In the next step, the author analysis the data uses a sufficient step according to the theory of capital budgeting. The first step, develop a pro-forma statement. The step required a reliable assumption in determine forecasted income statement, balance sheet and statement of cash flow. After that, the assessment of financial feasibility of PT XYZ by calculate cash flow, WACC and terminal cash flow as the input to four evaluation tools in capital budgeting there are Present Net Value, Internal Rate of Return, Profitability Index and Discounted Payback Period. Then, the last step is project risk assessment through sensitivity analysis and monte carlo simulation analysis.

FINDINGS AND ARGUMENT

Initial Investment & Financing Strategy

The requirement investment needs to run the project is IDR 98,169,450,000 (*see table 1*) which to meet the investment requirement, the financing strategy that will be used consists of 83.43% equity and 16.57% long term debt. The number obtained from the firm strategy which the portion of investment used to finance the initial net working capital will be supplied from the bank loan and the investments of the company's assets will be use the equity of PT XYZ.

Table 1 – Initial Investment of PT XYZ

Initial Investment	
Acquiring Equipment	74,495,000,000
Build Plant	6,350,000,000
Intangible Assets	50,000,000
Miscellaneous Assets	616,000,000
Working Capital	16,658,450,000
Total Initial Investment	98,169,450,000
Initial Investment – PT ABC	44,831,050,000
Initial Investment – PT Mitra Kerinci	36,679,650,000

Table 2 – Cash Flow of PT XYZ

Cash Flow (in Million)											
	0	1	2	3	4	5	6	7	8	9	10
Earnings Before Interest and Taxes(EBIT)	-	5,512.43	53,891.25	53,285.42	50,964.34	53,361.39	52,173.45	49,653.96	52,338.25	50,715.01	26,203.91
Tax of EBIT	-	1,378.11	13,472.81	13,321.36	12,741.09	13,340.35	13,043.36	12,413.49	13,084.56	12,678.75	6,550.98
Net Operating Profit After Tax	-	4,134.32	40,418.43	39,964.07	38,223.26	40,021.04	39,130.09	37,240.47	39,253.68	38,036.26	19,652.93
Depreciation & Amortization	-	8,595.10	8,595.10	8,596.59	8,603.59	8,606.56	8,359.76	8,374.99	8,374.99	8,381.77	8,392.27
Operating Cash Flow	-	12,729.42	49,013.53	48,560.65	46,826.85	48,627.60	47,489.85	45,615.45	47,628.67	46,418.03	28,045.20
Changes in Net Working Capital	16,658.45	51,263.77	20,687.69	-18,053.96	39,460.05	-15,735.10	-21,082.22	43,192.98	-17,495.76	-23,402.93	-31,056.55
Fixed Asset Investment	81,511.00	-	87.98	321.00	93.93	2,166.00	455.87	-	116.94	384.00	-
Net After Tax Cash Flow	- 98,169.45	- 38,534.35	28,237.87	66,293.61	7,272.87	62,196.70	68,116.20	2,422.48	65,007.50	69,436.95	59,101.75
Terminal Cash Flow											44,692.41
Total Cash Flow	- 98,169.45	- 38,534.35	28,237.87	66,293.61	7,272.87	62,196.70	68,116.20	2,422.48	65,007.50	69,436.95	103,794.16

Assumption of Pro Forma Statement

Since PT XYZ did not have any previous financial report, the assumption must be made in a monthly period for the first year. After that, the yearly assumption for the second year until the project end will be based on the first year forecast adjusted with the change using growth rate or percentage of sales. The monthly assumptions are obtained from the interview with the project supervisor from PT Mitra Kerinci, historical data from PT Mitra Kerinci and government regulation.

Cash Flow, WACC and Terminal Cash Flow of PT XYZ

Cash Flow will be calculated for 10 years period (*see table 2*) according to the legal agreement between two parties. After that,

the research will use the exit option in the termination period due to the availability of company's data. The calculation of WACC obtained from the cost of debt and cost of capital. Each of them should be weighted proportionally to arrive at the rate. Cost of debt will use the average state banks rate of 10.66%. With the corporate tax of 25%, the cost of debt after tax rate is 7.955%. With the comparable firm of PT TBLA, the firm derived the beta unlevered of 0.44. the firm can calculate the cost of equity of 12.11%. Then, the WACC is 11.41% that will be a discount rate to the FCFF and terminal cash flow. Furthermore, PT XYZ is expected to generate the terminal cash flow of IDR 44,692,406,688.58 (*see table 2*), which is obtained from the proceeds on sales of assets and net working capital in the final year of project.

Financial Feasibility Assessment Result of PT XYZ

The result of four evaluation tools can be obtained from the three steps above. The projected net present value is IDR 104,531,609,271.62 with the internal rate of return is 18.07%. Moreover, the project's discounted payback period expected to occur in 5 years 7 months 3 days with the profitability index of 2.06. The result of positive NPV, the internal rate of return higher than the weighted average cost of capital (18.07% > 11.41%) and the discounted payback is still less than the project's lifetime, can indicates the project of establishing a PT XYZ is considered financially feasible and worth to the investment.

Sensitivity Analysis

Sensitivity analysis is conducted for 47 assumptions of the account in the Pro Forma Statement due to those assumptions have a probability of changing in the future. The analysis starts by changing the value of the assumption to be 10% lower and higher than the actual value. Then, the result shows in establishing PT XYZ, the management has one sensitive variable in price and four variables related to production process.

Monte Carlo Analysis

The monte carlo simulation is conducted based on five sensitive variables derived from sensitivity analysis result. Prior to assessment, the minimum and maximum value of each assumption must be determined first to define the range of random value will occurs in each simulation. Then, the explanation of each variable are, as follows:

Price of dried stevia leaves

Based on the benchmarking of other country data, it stated the market price of dried stevia leaves is around 45 - 60 USD / 10 Kg in 2018. Since the market towards the country is different and the exchange rate between today's value and in the future will not be the same, the research will only use the range of the price from the average as the minimum and maximum value. Then, from an average of 52.5 USD will be equal to IDR 1,200,000, the minimum value of 45 USD is 1,028,571, and the maximum value of 60 USD is 1,371,429.

Fresh to dried weight plant ratio

The firm believes with the knowledge of skills & experience in stevia plantation, the ratio of dry weight plant equal to 40% from the fresh weight plant. However, in view of the expert data, the range of the ratio lies on 35% to 45%.

Dried leaf to total dried weight plant ratio

The range derived from the experimental data of PT ABC party, which in each plant yields in harvesting activity of stevia will contain the ratio between 0.50 to 0.65 leaves with the base value of 0.60.

The weight of fresh plant

Based on the experience in stevia plantation by PT ABC party, the range of fresh weight plant is from 25 gram to 40 gram per plant with the base value of 35 gram.

Volume stems should be planted per hectare.

Based on the expert coupled with the journals retrieved from the internet shows the range of stem used to grow the stevia lies from 75,000 stems to 100,000 stems planted per hectare with the base value of 95,000 stems.

Then, the result shows a confidence level of 95%, which implies the result from 1000 simulations is 95% describes the data population. From the table above, it shows the NPV will be in the range between IDR (57,332,042,500.89) to IDR 223,415,631,442.83. However, there is a 7.74 % probability the NPV will generate the negative value (*see figure 1*).

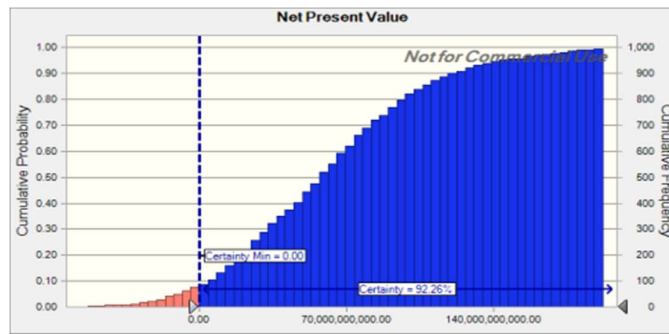


Figure 1 - Monte Carlo Result in Cumulative Frequency

CONCLUSIONS

The findings captured the capital budgeting techniques of IRR, NPV, Discounted Payback Period and Profitability Index of PT XYZ is still meet the decision criteria of the project to be accepted. The sensitivity analysis provides five sensitive variables of the sales price of dried stevia leaves, fresh to dried weight plant ratio, dried leaf to total dried weight plant ratio, the weight of fresh plant and volume stems should be planted per hectare. Coupled with the monte-carlo simulation, those key variables will give the range of NPV between IDR (57,332,042,500.89) to IDR 223,415,631,442.83. The bottom line of the investment project occurred as the expected minimum value is negative that happened because most of the critical risks factor is affected by many factors including the environmental factors that can not be controlled 100% by the firm. However, the result indicates the probability that the negative earnings would happen at 7.74%. Then, the project is still in the company's level of acceptance, which is 85%. As a recommendation, the research provides some mitigation action of maintain and improve agriculture productivity on the track, by developing precision agriculture and Improve inputs quality of the farm such as fertilizer, stems and water, and build a long term price agreement to reduce price volatility

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