Capital Investment Analysis of New Business Unit Education Technology at PT Berau Coal

Cahyo Andrianto
Executive MBA Student, School of Business and Management Institute of Technology Bandung, Bandung
cahyo.andrianto@sbm-itb.ac.id

Yunieta Anny Nainggolan
Lecturer of Business Risk and Finance Interest Group, School of Business and Management Institute of Technology Bandung, Bandung
yunieta@sbm-itb.ac.id

Abstract

Nowadays, education technology disturbs the traditional learning process to encourage learners to learn anywhere and anytime. The majority of education technology companies were founded in the past six years. The education technology company indicated the profit when operating for around five years. PT Berau Coal developed a learning management system called Sintesis+. Sintesis+ provides a learning experience with two-channel, web-based and apps-based which covered 21,000 users in 2020. Author uses DCF parameter analysis; NPV of IDR 2.631 billion, IRR of 38%, and Payback Period of 2,42 years of operation, Sintesis+ have a great chance to compete with other education technology companies. Based on most sensitive variables that affecting NPV are employee salary, discount rate, and tax rate.

Keywords: DCF, Learning Management System, PT Berau Coal, Sintesis

1. Introduction

PT Berau Coal creating strategy in 2020 related to the challenge of operational mining in Indonesia, there are two strategies: safe and efficient operation, creating business improvement and new opportunities. Furthermore, related to that beyond operation excellence target, HSE Certification and Training will evaluate Sintesis+ Platform as the learning management platform which implemented for PT Berau Coal contractors has been creating value since the Platform exists in 2018. HSE Certification and Training Department will analyze the financial projection of the Platform, which can be a charge to Berau Coal's contractors and also opportunity to expand to new market as a new business unit which fits the organization due to in line with company strategy, which can make efficient.Sintesis+ is a learning management system that has a valuable impact on operational PT Berau Coal.

1.1 Objectives

The objective of this research To know financial feasibility of the proposed new business unit related education technology.

2. Literature Review

Discounted Cash Flow (DCF) analysis is one of the most used techniques that commonly used for deriving economic and financial performance criteria in order to appraise investment projects (Herbohn & Harrison, 2002). The DCF analysis usually consists of five formulas which are: Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), and Discounted Payback Period (DPBP), and Profitability Index (PI).

a. Net Present Value (NPV)

Net Present Value is one of the formulas in DCF analysis that used to give the value of the financial project for the few next years in the present time. The NPV formula is basically the sum of the discounted annual cash flow of the project we appraised (Herbohn & Harrison, 2002). Here is the formula

$$NPV = \sum_{t=1}^{n} \frac{C_t}{(1+r)^t} - C_0$$

Where:
C_t : Net Cash Inflow for year 1,2, .., t
r : The interest rate
C_o : The initial investment
t : The number of year of the investment

b. Internal Rate of Return (IRR)

Internal Rate of Return is the value of interest rate that will result the sum of discounted cash flow is zero (Herbohn & Harrison, 2002). The project is worth to be invested if the IRR greater than the cost of capital or interest rate. Here is the formula:

$$IRR = r_a + \frac{NPV_a}{NPV_a - NPV_b}(r_b - r_a)$$

Where;
r_a : lower interest rate chosen
r_b : higher interest rate chosen
NPV_a : NPV at r_a
NPV_b : NPV at r_b

c. Payback Period and Discounted Payback Period

Payback Period (PBP) is the number of years needed for the project to break even, in other words, to cover the investment at the beginning of the period (Herbohn & Harrison, 2002). In other hand, the Discounted Payback Period (DPBP) is the number of years needed for project to break-even but includes the time value of money in the calculation. The formula of Payback Period is:

$$PBP = \frac{Initial\ Investment}{Sum\ of\ Cash\ Inflows}$$

Meanwhile, the Discounted Payback Period formula is:

$$DPBP = \frac{Initial\ Investment}{sum\ of\ Discounted\ cash\ inflows}$$

d. Profitability Index (PI)

Profitability Index is the ratio of the Net Present Value (NPV) and the initial investment of the project. The index is also commonly called as Benefit-Cost Ratio because it represents the cost and the benefit of investments (Puska, Beganovic, & Sadic, 2018). Here is the formula:

$$PI = \frac{NPV}{Initial\ Investments}$$

e. Sensitivity Analysis

Sensitivity Analysis is an analysis that will tell us which input variable is the most significant in contributing to the output variability. This analysis is also measured the magnitude of the change in the output variable as an impact from the change in the independent variables and parameters. The result of this analysis will be important in the decision making of project investment. (Haahtela, 2011).

3. Results and Discussion

Assumptions

The Sintesis+ has been running for 2-3 years under the Berau Coal Company. It means the business has also adopted the cost structure and financial assumptions of the Berau Coal, which is the Mining Company. In order to check the feasibility of Sintesis+ to become a separate business unit, we need to reassume the cost and financial structure of the business.

Table 1. The Changes in Assumptions and Cost Structures

Components	Units	FY0 0	FY1 1	FY2 2	FY3 3	FY4 4
Assumptions						
New contents development	Nos		60	60	60	60
Video cost	IDR/Nos		12.470.000	12.470.000	12.470.000	12.470.000
Discount Rate	%	30,00%	30,00%	30,00%	30,00%	30,00%
Tax	%		45,00%	45,00%	25,00%	25,00%
Product Development	ls	1.100.000.000		360.000.000	360.000.000	360.000.000
Marketing budget	ls	314.000.000	345.400.000	379.940.000	417.934.000	459.727.400
Creating Platform	ls	217.500.000				
Platform Maintenance	ls		217.500.000	217.500.000	217.500.000	217.500.000
Manpower Cost	ls		1.890.200.000	2.079.220.000	2.287.142.000	2.515.856.200
Office Cost	ls		384.000.000	384.000.000	384.000.000	384.000.000
Sales volume (B2B) Internal	IDR mio		20.000	20.000	20.000	20.000
Sales volume (B2B) External	IDR mio			2.400	3.200	4.000
Sales volume (B2C)	IDR mio			19.000	23.750	29.688
Unit Sales Price (B2B Internal)	IDR mio		200.000	200.000	200.000	200.000
Unit Sales Price (B2B External)	IDR mio		50.000	50.000	50.000	50.000
Unit Sales Price (B2C External)	IDR mio		200.000	200.000	200.000	200.000

Table 1 shows us the changes in assumptions and cost structure if we want to evaluate the financial projections of Sintesis+ when the business is starting to become Start-up Company. First, the tax rate will be lower to 25% since the business will not be in under the mining company. For the content and platform development, the number of video produced will increase because when the company becomes the start-up, they will be more focusing on the Sintesis+ only as their main business line. Therefore, after adjusting the video cost higher to get better quality of content, the content development cost will increase. It also applies to platform cost. Meanwhile, for the manpower cost, the wage rates are adjusted to be more marketable rate, and lastly the office cost will show up as an additional cost in the company.

The assume that even after becoming Start-up Company with Sintesis+ as the main business unit, the parent company, Berau Coal, will still nurture the company until the second year (FY2) in order to keep the efficiency of the cost structure of the company. The Berau Coal will be still bearing the cost of Board of Executive of the Sintesis+ start-up company which is CEO, CTO, and CMO. Moreover, we will also assume that until the start-up completely independent and not nurtured by the parent company (FY2), the tax rate will be still in the rate of 45%, or the tax rate in the Mining industry.

Startup capital

The startup capital components are depicted in Table 2 . Product development consists of capital required to establish the required Platform to launch the project through product development contract with vendors. The contract value is assumed accordingly based on prior experience. The product development for FY0 is IDR 1,100 million. The marketing activities at the initial year are expected to reach other potential users the same amount of current user counts (approximately 21.000 users). With assumed cost per click at $1.03, the marketing cost is budgeted at IDR 314 million (IDR 14,500/USD exchange rate). The legal/administration cost is budgeted IDR 100 million to covers any cost required to establish a legal business entity and administrational expenses.

Table 2. Startup capital calculation

Components	Units	FY0 0	FY1 1	FY2 2	FY3 3	FY4 4
Starting Capital						
Product Development 2	IDR mio	1.100				
Marketing Cost	IDR mio	314				
Legal/Administration	IDR mio	100				
Creating Platform	IDR mio	218				
Manpower Cost	IDR mio	-				
Office Cost	IDR mio	-				
Total Starting Capital	IDR mio	1.732	-	-	-	-

Operating Cost Projection

The operating cost components are shown in Table 3, Product development is planned to be continued by the second year of operation since the first year of operation will be focusing on gathering the user feedback of the platforms. The budgeted cost of product development is set at IDR 360 million based on prior similar projects. By the first year of operation, new contents development will be continuously conducted. The total annual cost of new content development is expected to produce 60 new contents per year so that the cost of new content development is IDR 748 million per year. Marketing budget at the first year and so on will be having growth of 10% per year. The manpower cost will be required starting from the first year of operation to covers 3 executive positions and 13 employees. The manpower cost will be also having growth of 10% per year. At last, the office cost will be carried out from the first year with the amount of IDR 384 million per year.

Table 3. Operating Cost Projection

Components	Units	FY0 0	FY1 1	FY2 2	FY3 3	FY4 4
Operating Cost						
Product Development 2	IDR mio		-	360	360	360
New contents development	IDR mio		748	748	748	748
Marketing budget	IDR mio		345	380	418	460
Platform Maintenance	IDR mio		218	218	218	218
Manpower Cost	IDR mio		1.890	2.079	2.287	2.516
Office Cost	IDR mio		384	384	384	384
Total Operating Cost	IDR mio	-	3.585	4.169	4.415	4.685

Revenue Projection

The revenue projection is shown in Table 4. The revenue is expected to flow in from 3 streams. The first is from B2B in current internal users, where users will be charged by IDR 200.000 annually. The second is from B2B sales from external parties and expected to be achieved after certain contracts are secured. The first offering price per user is expected to be IDR 50.000 paid annually, with 2.400 users. The amount of user from this stream is expected to growth by 3.200 on the third year, and 4.000 on the fourth year. The third stream of revenue is expected to be obtained from B2C sales, where the user have to pay IDR 200.000 annually, and target users count in second, third, and forth year at 19.000; 23,750; and 29,688 respectively.

Table 4. Revenue Projection

Components	Units	FY0 0	FY1 1	FY2 2	FY3 3	FY4 4
Revenue						
Sales from B2B Internal	IDR mio	-	4.000	4.000	4.000	4.000
Sales from B2B External	IDR mio	-	-	120	160	200
Sales from B2C	IDR mio	-	-	3.800	4.750	5.938
Total Revenue	IDR mio	-	4.000	7.920	8.910	10.138

Financial Projection

Based on required startup capital, operating cost projection, and revenue projection, the business financial projection is shown in Table 11. At the Year-0, the company will spend IDR 1.732 billion to initially run the business. At the Year-1, the total cash flow is expected to be positive at IDR 206 million including the deduction of tax by 45% of total EBITDA. The second year is also expected to be positive at IDR 1.403 billion with the same rate of tax. The third year and fourth year is also expected to be positive with IDR 1.741 billion and IDR 2.407 billion respectively. For the notes, the tax rate in third and fourth year will be decrease to the rate of 25%.

Table 5. Financial Projection

Components	Units	FY0 0	FY1 1	FY2 2	FY3 3	FY4 4
Financial Projection						
Revenue	IDR mio	-	4.000	7.920	8.910	10.138
Operating Cost	IDR mio	-	3.585	4.169	4.415	4.685
Starting Capital	IDR mio	1.732	-	-	-	-
EBITDA	IDR mio	-	415	3.751	4.495	5.452
Tax	IDR mio		187	1.688	1.124	1.363
Earning after Tax	IDR mio		228	2.063	3.371	4.089
Cash Flow	IDR mio	(1.732)	228	2.063	3.371	4.089
Discounted Cash Flow	IDR mio	(1.732)	175	1.221	1.535	1.432

The financial projection above will be analyzed using Discounted Cash Flow (DCF) approach. Based on the calculation of the financial projection using discounted cash flow approach, the DCF parameters were analyzed to perform investment decision analysis. Based on the financial projection shown in Table 6, the result Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), Discounted Payback Period (DPBP), and Profitability Index (PI) are shown in table below.

Table 6. DCF parameter analysis

Net Present Value	IDR mio	2.631
Internal Rate of Return	%	38%
Payback Period	Years	1,84
Discounted Payback Period	Years	2,42
Profitability Index		2,52

Based on the DCF parameter analysis, the NPV is projected to be positive at IDR 2.631 billion for 4 years project lifetime, with IRR of 38%, and will be paying back the initial investment in 1,84 years of operation. The discounted payback period is still around 2,42 years of operation and the profitability index is 2,52.

Refer to the result, if we try to elaborate the value resulted by the calculation above, the business has really a good prospect in the next 4 years. The NPV's value of IDR 2.631 Billion is higher than the initial investment of IDR 1,732 Billion. Moreover, if we look at into the IRR result, the value of 38% is also 8% higher than the interest rate, which is only 30%.

The payback period and discounted payback period in the second years of operation is really fits perfectly with our assumption that the nurturing period from the parent company will be fully ended after the second year. At last, the sintesis+ has an opportunity to gain profit 3 times higher than the initial cost spent in the first year in only four years of operation.

Sensitivity Analysis

In order to strengthen the projection above, we need to support the DCF parameter analysis with sensitivity analysis to find out which variable that really significant affecting the sintesis+ financial projection. We put Net Present Value (NPV) as dependent variable and will put the costs and assumptions as parameters that affecting the NPV. Net Present Value is chosen because the NPV is the core of others DCF calculation.

Table 7. Parameter & Scenario Sensitivity Analysis

		Scenario			
Parameter	**Input**	**Pesimis**	**Base**	**Optimis**	**%**
Product Development	360,000,000	378,000,000	360,000,000	342,000,000	5%
New contents developmer	60	50	60	70	10
Marketing budget	314,000,000	376,800,000	314,000,000	251,200,000	5%
Manpower Cost	1,890,200,000	2,268,240,000	1,890,200,000	1,512,160,000	5%
Office Cost	2,000,000	2,100,000	2,000,000	1,900,000	5%
Discount Rate	30.00%	35%	30.00%	25%	5%
Tax Rate	45%	45%	45.00%	25%	
IRR	38.45%				
NPV	2,631				

As we can see in the table and graph below, the most sensitive variables that affecting NPV are manpower cost, followed discounted rate and marketing budget. It is totally making sense because the interest rate itself is a factor that heavily affects the calculation of NPV and the manpower cost is the biggest cost in the cost structure of Sintesis+.

Table 8. Sensitivity Analysis

Input Variable	Corresponding Input Value Low Output	Base Case	High Output	NPV Output Value Low	Base	High	Swing	Percent Swing^2
Manpower Cost	2,268,240,000	1,890,200,000	1,512,160,000	2,047	2,631	3,215	1,167	47.7%
Discount Rate	35.00%	30.00%	25.00%	2,171	2,631	3,172	1,002	35.1%
Tax Rate	45%	45%	25%	2,631	2,631	3,139	508	9.0%
Marketing budget	376,800,000	314,000,000	251,200,000	2,462	2,631	2,800	339	4.0%
New contents developmer	70	60	50	2,462	2,631	2,800	337	4.0%
Office Cost	2,100,000	2,000,000	1,900,000	2,605	2,631	2,657	52	0.1%
Product Development	378,000,000	360,000,000	342,000,000	2,614	2,631	2,648	33	0.0%

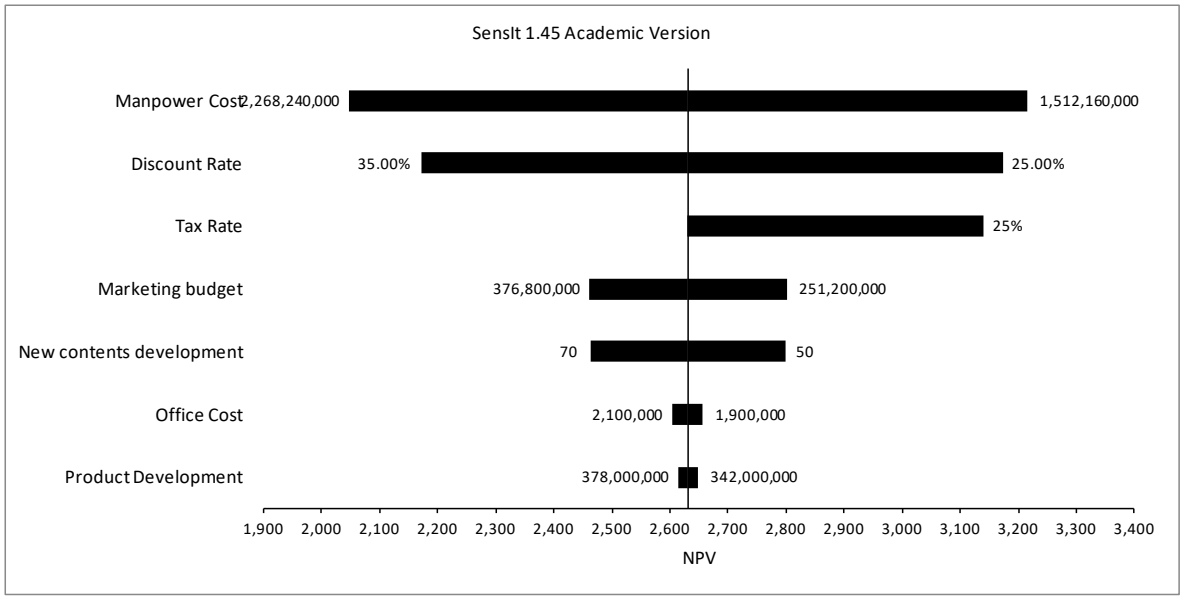

Figure 1 Sensitive Analysis Tornado Chart

3. Conclusion

Author evaluates the financial projections with the start-up based assumptions and using DCF and Sensitivity analysis, the author believes the Sintesis+ is really feasible to become a new business unit that can be separated from Berau Coal. The Sintesis+ have an advantage in the cost structure that is cost efficiency due to the possibility of nurtured by the parent company. With the NPV of IDR 2.631 billion, IRR of 38%, and Payback Period of 2,42 years of operation, Sintesis+ have a great chance to compete with other education technology companies. Based on most sensitive variables that affecting NPV are employee salary, discount rate, and tax rate

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