

BUSINESS FEASIBILITY STUDY ON CHOCOLATE SPRINKLER MANUFACTURER'S EXPANSION AT EAST JAVA

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ABSTRACT

The purpose of this research is knowing whether chocolate sprinkler manufacturer's business expansion feasibility using five aspects which are market and marketing aspect, management aspect, technical and technology aspect, legal aspect, and financial aspect. Market aspect analyses the projected market demand. Marketing aspect analyses how to achieve the target. Management aspect analyses the external and internal factor that can support and/or hinder this business expansion. Technical and technology aspect analyses the company's location, capacity determination, machine and technology, and manufacturing layout. Legal aspect analyses the permit and document needed. Financial aspect analyses the discounted payback period, net present value, internal rate of return, modified internal rate of return, and Monte Carlo Simulation. According to the analysis, the chocolate sprinkler manufacturer's business expansion passes feasibility test using those five aspects. In conclusion, the proposed project is feasible and profitable.

Keywords: Business feasibility study; NPV; IRR; MIRR; Monte Carlo simulation

INTRODUCTION

Food and beverages industry in Indonesia is the strongest contributor of Indonesian economy. It grows 7.19% in 2018 which was above Indonesia national economy growth of 5.17%. The employment rate in this industry also grew 18.25 million in 2018 compared to 2015. The ministry of commerce and industry asserted that the implementation of industry 4.0 would boost the innovation and competitiveness of national food and beverages industry in international stage (Kemenperin, 2019).

This study analyzes a feasibility study on the expansion of a chocolate sprinkler manufacturer in East Java. Chocolate sprinkler is a complementary product. It is rare to be consumed alone. Chocolate sprinkler is popular in Indonesia for its flavors and shapes. It has to be combined with other food or drinks such as bread, cake, or milk shake. Therefore, the demand follows other food and beverages. If the food and beverages industry grows, the chocolate sprinkler industry will also grows.

As the economy grows, most companies should take this opportunity to expand their business. That is the reason why a chocolate sprinkler manufacturer wants to know whether it is feasible to expand the business. Expanding business is not only about making more products or boosting sales, but also seeing the business holistically. There are some factors in the company that needs to be upgraded such as production capacity, machinery, and information system. Company should also see from the perspective of the demand whether the demand is capable to absorb the supply.

Using business feasibility study, a company will analyze its capability using five aspects. The first aspect is market and marketing aspect, then the management aspect. The third aspect is technical and technological aspect, whilst the fourth is legal aspect. The last aspect is financial (Suliyanto, 2010). If one of the aspects isn't feasible, the plan to expand shouldn't be implemented.

RESEARCH METHODS

According to Kusuma & Mayasati (2014), there are five aspects to be analyzed in business feasibility study. The first aspect is market and marketing aspect. Market aspect is the size of the industry we are going to analyze, while marketing aspect is the way we are going to grab the market. Most of the data for market aspect is going to be taken from Indonesia economy outlook and other relevant report about food and beverages industry. For marketing aspect, this research uses STP (Segmenting, Targeting, and

Positioning) analysis, demand analysis, and marketing mix (Durri et al., 2016).

The second aspect is management. It is the business process inside the company (Suliyanto, 2010). This research is going to use TOWS analysis, PESTLE, and Porter's five forces. TOWS analysis will use threat, opportunity, weakness, and strength as part of the factor (Humphrey, 2005). PESTLE will analyze the feasibility from the perspective of politics, economics, social, technology, legal, and environment (Yudha et al., 2018). Porter's five forces will analyze the business taken from the perspective of industry rivalry, threat of new entrants, bargaining power of buyers, threat of substitute products, and bargaining power of suppliers (Porter, 2014).

The third aspect is technical and technological. This aspect covers four factors which are business location, production capacity, machine and technology, and factory layout. The data will be taken from the expansion plan that has been made before.

The fourth aspect is legal. It relates with the permits and/or documents required by the government to run the business. The legal aspect that will be followed is the Indonesian law. Some documents required for expanding the business are *BPOM* (Indonesian Food and Medicine Bureau) number, environmental analysis, and *CV (Commanditaire Vennootschap)* or limited liability company registration.

The last aspect is financial. This aspect needs information from the previous aspect as the input. In this aspect, we will know whether the business will make financial profit or not (Suliyanto, 2010). In this research, the financial aspect will use PP (Payback Period) analysis, NPV (Net Present Value), IRR (Internal Rate of Return) and Modified Internal Rate of Return (MIRR), and Monte Carlo Simulation. All of the financial analysis will be adjusted based on pessimistic scenario, most likely scenario, and optimistic scenario.

Payback Period analysis is an analysis to know the length of time required to get break- even point. The one that will be used in this research is the discounted payback period. The discounted payback period will use NPV of the cash flow. According to Gitman and Zutter (2013), the formula for discounted PP analysis is shown below.

$$PP = \text{discounted period of break - even} + \% \text{residual}$$

NPV is a method to determine the current business value from the net cash flow with the current cost of investment. According to (Gitman & Zutter, 2013), NPV is often used to measure an investment. The formula is shown below.

$$NPV = \sum_{t=1}^T \frac{CF_t}{(1+r)^t} - CF_0$$

IRR is a method to calculate the business value addition with the cash flow. IRR is usually calculated using NPV equal to zero. MIRR is the modified version of IRR calculation. IRR might have two or more different percentage as a result, so it will confuse the analysis. Because of that, this research will also calculate the MIRR. The formula is shown below (Rangel et al., 2016).

$$(1 + MIRR)^n = \frac{R}{P} \left[\frac{(1+i)^n - 1}{i} \right]$$

Monte Carlo simulation is a method to predict something complex and random. This method is used because business currently is affected by many dynamic factors. Kroese et al., (2011) argued that this random data was the main strength of Monte Carlo Simulation to make a prediction.

Results

The results of the feasibility analysis can be seen in table 1. The first aspect in this feasibility study is market and marketing aspect. The market aspect is analyzed to understand the market size and its prospect in the future. Based on the analysis, the chocolate sprinkler demand in East Java has a relatively good growth at 7% per year. The marketing aspect is the way company should do to grab its market. The biggest segment for chocolate sprinkler industry is the SME, therefore the appropriate target market is the SME industry especially the bakery. The marketing strategy will be focused on the affordable product with good quality.

Table 1. Analysis Results Summary

No.	Aspect	Factors	Results
1.	Market and Marketing	Market	The chocolate sprinkler's average demand growth is 7% per year.
		Marketing	According to STP analysis, the current target is SME in food and beverages industry. Indonesian food and beverages industry grows at 7.19% in 2018 which is dominated by SME. The marketing mix will be focused on how to market the product to SME.
2.	Management	PESTLE	Politics, economy, and technology are the factors that will support chocolate sprinkler industry in the future.
		Porter's Five Forces	Bargaining power of buyers in chocolate sprinkler industry has the highest value because there are many brands options in chocolate sprinkler industry. Industry rivalry and bargaining power of suppliers has the lowest value.
		TOWS Analysis	The opportunity in TOWS analysis is the biggest factor in this research's TOWS analysis. The opportunity in chocolate sprinkler industry is growing because of the demand and trend in the future.
3.	Technical and Technological	Business Location	The business location won't change because the current location is strategically good.
		Production Capacity	Production capacity will be increased by 100%
		Machine and Technology	Machine and technology will be increased and changed based on the current technology.
		Factory Layout	Factory layout will be changed to accommodate the production increase.
4.	Legal	Documents and Permits	Most of the documents and permits required are already acquired. The only one that is still in the process of making is halal certificate.

The second aspect is management aspect. It is about the surrounding environment that can hinder or support the business. The first factor that is used is PESTLE analysis. Politics, economy, and technology are the factors that will support chocolate sprinkler industry in the future. Politics factor supports the industry with the government's intensive support on economy especially SMEs. Economy factor support the industry because Indonesia economic growth is predicted to grow in the future. Technology factor

supports the industry with more efficient and effective machine and IT innovation (Yudha et al., 2018). The second factor in management aspect is Porter’s Five Forces analysis. The analysis reveals that bargaining power of buyers in chocolate sprinkler industry has the highest value because there are many brands options in chocolate sprinkler industry. Industry rivalry and bargaining power of suppliers has the lowest value. Industry rivalry in chocolate sprinkler industry can be very complex. In one hand, the brands are in a fierce competition while the production can be shared amongst the brand owner. The bargaining power of supplier is low because there are many suppliers. If a supplier doesn’t give the best price and service, the buyer will move to the other supplier easily.

The third factor is the TOWS analysis. The opportunities in TOWS analysis are stronger than the threats, while the strengths are stronger than the weaknesses. The opportunity in chocolate sprinkler industry is strong because of growing demand and trend in food and beverages industry especially chocolate sprinkler. The strengths lie on the product quality and the flexible price.

The third aspect in this feasibility study is technical and technological aspect. This aspect will cover the tools and technology that can support the business process. The first factor is the business location. The business location won’t change because the current location is strategically good. The second one is production capacity. The production capacity will be increased by 100%. The third one is machine and technology. Machine and technology will be increased and changed based on the current technology. The last one is factory layout. Factory layout will be changed to accommodate the production increase.

The fourth aspect is legal aspect. Legal aspect will cover the documents and permits that is issued by the government to legalize the business. The legal aspect that is used here is Indonesian commercial law. From the company itself, most of the permits are already acquired except halal certificate.

The fifth aspect in this feasibility study is financial aspect. The initial investment that is used in this research is IDR 3,755,000,000. The cash flow is projected at IDR 10,000,000 – IDR 19,000,000,000 based on each scenario. The result of the analysis is all positive. The discounted payback periods on the expansion are 134 days on pessimistic scenario, 129 days on most likely scenario, and 127 days on optimistic scenario. The NPVs are all above 0. The results are IDR 44,685,929,094 on pessimistic scenario, IDR 48,825,240,986 on most likely scenario, and IDR 52,259,655,916 on optimistic scenario. The IRR and MIRR are also above 0. The IRR is 309% on pessimistic scenario, 322% on most likely scenario, and 331% on optimistic scenario. The MIRR is 83% on pessimistic scenario, 86% on most likely scenario, and 89% on optimistic scenario. The summary of results of the financial analysis are shown in Table 2.

Table 2. Financial Analysis (Discounted Payback Period, NPV, IRR and MIRR)

No	Scenario	Discounted Payback Period	NPV	IRR	MIRR
1	Pessimistic	134 days	IDR 44,685,929,094	309%	83%
2	Most Likely	129 days	IDR 48,825,240,986	322%	86%
3	Optimistic	127 days	IDR 52,259,655,916	331%	89%

The Monte Carlo Simulation shows on table 3 that the business will have a positive net profit. The Monte Carlo Simulation uses random data to generate the simulation. All of the simulation shows that even if the revenue decrease in some years, the profit will still be positive. That means the business will have a good profitability in a dynamic situation as long as the cost is the same as the assumption.

Table 3. Results of Monte Carlo Simulation

Description	STDEV	Simulati on 2018	Simulati on 2019	Simulati on 2020	Simulati on 2021	Simulati on 2022
Revenue	5,932,409,275	26,349,665,944	27,300,009,964	34,308,505,372	48,727,056,314	36,073,394,877
Variable Expense	2,450,699,788	10,442,137,589	12,348,091,948	18,084,795,744	15,582,102,105	17,103,168,405
Fixed Expense	1,290,148,324	7,649,007,743	8,649,412,832	9,838,299,462	10,996,716,071	10,934,812,491

Net Profit	2,142,486,1 48	8,258,520,6 13	6,302,505,18 4	6,385,410,1 67	22,148,238,1 38	8,035,413,9 82
Cash Flow	2,426,409,2 99	12,077,700,6 13	10,996,185,1 84	11,079,090,1 67	26,841,918,1 38	12,729,093,9 82

Discussion

According to Suliyanto (2010), if all of the aspects is feasible, this expansion should be implemented immediately. From the result above, all five aspects are feasible. The next step that can be done is implementing the expansion. This result is also in line with Durri et al. (2016) about the expansion of PO Zena Malang. The market and marketing aspect is feasible because the demand of chocolate sprinkler in East Java is predicted to grow from 2018 to 2022. The management aspect is feasible because PESTLE analysis, Porter's Five Forces, and TOWS analysis support the business expansion from their own perspectives. The technical and technological aspect is feasible because each factors' results support the expansion. The legal aspect is feasible because most of the document and permits from the government are already made. The financial aspect is feasible. First, the payback period is lower than five years. From the NPV, the result shows positive percentage. From the IRR and MIRR, the results also show positive percentage. The Monte Carlo Simulation shows that the business will have a positive net profit.

This research has several limitations. The first limitation is the projection accuracy because many analyses are based on the assumption of researchers and other cited researches. The second limitation is research expiration date. The expiration date of this research is more or less five years. After five years, this research should be reanalyzed for better accuracy. The third limitation is area. The scope of this research is East Java; therefore, it can have different result if it is applied in other area. There are some aspects that will have same result as this research, but it is better to adjust the circumstances based on each area. The fourth limitation is hardware and software on Monte Carlo Simulation. This Monte Carlo Simulation used here is the simple version because of limited fund on hardware and software used.

There are several recommendations for the company. The first recommendation is continuous innovation on products or business processes. The second recommendation is recruiting more experts. The last recommendation is acquisition of other companies if it is possible. For future research, the researchers suggest on using a strong computer to generate the simulation with high accuracy.

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