Chapter II

THEORETICAL BACKGROUND

There are times when a company has to grow; this may comes as a result of many occurrences, such as growing competitors, to boost income, necessity to give selections to customers, etc. If a business is stagnant when a competitor grows, soon the business will lose its customers to its competitor, which may offer more varieties, or made cheaper product. So, a business has to grow, simply due to the nature of the competitive environment that will not let it survive without emerging. According to Philip Kotler, there are four ways for a company to grow.

Figure II.1

Kotler Growth Strategy Matrix

	Present Products/Services	New Products/Services
Present Markets	Market Penetration	Product Development
New Markets	Market Development	Diversification

Source www.planonline.org/planning/marketing/growthmartix.htm

This matrix allows businessman to consider ways to grow the business via existing and/or new products, in existing and/or new markets (there are four possible product/market combinations). This matrix consist of four strategies:

1. Market Penetration (existing market, existing product)

   Occurs when a company enters a market with current products. The best way to achieve this is by gaining competitors' customers (part of their market share). Other ways include attracting non-users of their product or convincing current clients to use more of their product/service, with advertising or other promotions.

2. Product Development (existing market, new product)

   A company with a market for its current product might embark on a strategy of developing other products catering to the same market. For example, McDonalds is always within the fast-food industry, but frequently markets new burgers. Frequently, when a firm creates new products, it can gain new customers for these products. This is the strategy which Marga Agung want to pursue, same market but with new product which is furniture.

3. Market Development (new market, existing product)

   An established product in the marketplace can be targeted to a different customer segment as well as non-buying customers in currently targeted market, as a strategy to earn more revenue for the company. Exporting the product, or marketing it in a new region is examples of market development.

4. Diversification (new market, new product)

   Diversification is a form of growth marketing strategy for a company. It seeks to increase profitability through greater sales volume obtained from new products and new markets. Virgin Cola, Virgin Megastores, Virgin Airlines, Virgin Telecommunications are examples of new products created by the Virgin Group of UK, to leverage the Virgin brand. This resulted in the company entering new markets where it had no presence before.

II.1. Business Plan

Business plan is a very important tool for a businessman or a decision maker in a company to make sure whether the ongoing and upcoming business activity is on track as it has been planned before. (Rangkuti, 2005) Business activity can be creating a new business, developing the existing business (merger, raise the fund, adapting new technology, opening new branch office, etc), or acquisition of a business.

The purpose of business plan is to minimize the risk associated with a new business and maximize the chances of success through research and maximize the chance for success through research and planning. (Subagyo, 2008) Businessman also use business plan to searching fund from third party, such as bank, investor, etc.

There are four important elements in a business plan, which are:

1. Explanation of the business and its strategic planning

2. Marketing plan
3. Financial management plan
4. Operational management plan

II.2. Investment Analysis

II.2.1. Depreciation

Pujawan (1995) says that depreciation and tax are two important factors that must be considered in feasibility study. Although depreciation is not a cash flow, but its amount and its time will influence tax that must be paid by the company. Tax is a cash flow. For that reason, tax must be considered as tools cost, material, energy, worker, etc. A good knowledge about depreciation and tax system will help in make a decision related to investment.

Depreciation is value reduction of a property or an asset because of time and usage. Depreciation of a property (asset) usually caused by these one or more factors:

a. Physical damage because the usage its tool or property.
b. Newer and bigger production need or service.
c. Decreasing production need or service.
d. The property becomes obsolete because of technology development.
e. The invention of facilities that can earn more products with lower cost and better safety level.

Not all properties can be depreciated. There are several qualifications that must be fulfilled to depreciate a property, such as:

a. Must be used in business necessity or to earn income.
b. Economic life is countable.
c. Economic life more than a year.
d. Must be something that used, something that become obsolete, or something that its value decreased because of scientific reasons.

There are many methods that can be used to determine yearly depreciation of an asset. From all the methods, the most popular are:

a. Straight Line method or SL
b. Sum of Year Digit method or SOYD
c. Declining Balance method or DB
d. Sinking Fund method or SF

II.2.1.1. Straight Line Method or SL

This method is based on assumption that the decreasing of an asset linearly (proportionally) to time or age of that asset. This method is commonly used because it is easy and simple. The formula of Straight Line method:

Depreciation = (Cost - Residual value) / Useful life

$$Dt = \frac{P - S}{N}$$

Information:

Dt = depreciation at t year

P = purchase price of asset

S = salvage value

N = year of life

II.2.1.2. Sum of Year Digit Method or SOYD

This method is designed to charge bigger depreciation at the beginning year and smaller for the next years. This means Sum of Year Digit charge depreciation faster that Straight Line method. Accelerated depreciation method in which the amounts recognized in the early periods of an asset's useful life are greater than those recognized in the later periods. The SYD is found by estimating an asset's useful life in years, assigning consecutive numbers to each year, and totaling these numbers. For n years, the short-cut formula for summing these numbers is SYD = n(n + 1)/2. The yearly depreciation is then calculated by multiplying the total depreciable amount for the asset's useful life by a fraction whose numerator is the remaining useful life and whose denominator is the SYD. Thus annual depreciation equals

$$(\text{Original Cost} - \text{Salvage Value}) \times \frac{\text{Remaining Useful Life}}{\text{SYD}}$$

II.2.1.3. Declining Balance Method or DB

This method is similar to Sum of year Digit. This method used if asset age more than 3 years. The depreciation value of the certain year determined by multiplies fixed percentage of asset value in the end of the previous year.

$$Dt = dBVt - 1$$
$$d = (F/P)^{1/t} \; and BVt = (1-d)^{1/t}$$

Information:

d = determined depreciation

BVt-1 = asset value at the end of the previous year

F = residue value

P= invest value

T = economic life

II.2.1.4. Sinking Fund Method or SF

This method use assumption that the depreciation of the next year is faster than previous year. The formula of Sinking method:

$$Dt = (P - S)(A/F, i\%, N)(F/P, i\%, t-1)$$

Table II.1

The advantages and disadvantages of the methods

Method	Disadvantages	Advantages
Straight Line	The depreciation of an asset assumed linear to time or age of the asset	The easiest and simplest
Sum of year Digit	Charge bigger depreciation at the beginning year and smaller for the next years	Give more benefit if seen from tax payment

Declining Balance	Can be used if the asset age is more than 3 years, is not suitable for short age asset. Depreciation load is bigger at the beginning and decrease at the next years, but the depreciation is faster than sum of year digit.	Gives more benefits if seen from the payment of income tax. This method has residue value from an asset will be reached at the end of the asset life.
Sinking Fund	Is not give benefit if seen from the payment of income tax.	Depreciation load less at the beginning and greater at the next years. This method is good if in the calculation, interest is considered.

Source Pujawan, 2003

II.2.2. Minimum Attractive Rate of Return (MARR)

Pujawan (1995) said interest rate that used as a basic standard in evaluating and comparing many alternatives named MARR. MARR is the minimum value from rate of return or acceptable interest by investor. With rate of return smaller than MARR so that investment is not economically good and unfeasible to be done.

For feasibility study, interest rate used is manufacture's MARR. Usually each manufacture determines their own MARR standard to consider their investments. MARR calculation formula is:

$$MARR = ir + if + (ir)(if)$$

Where, ir = interest rate / year and if = inflation rate

II.2.3. Net Present Value (NPV)

As the flaws in the payback method were recognized, people begin to search for methods of evaluating projects that would recognize that a dollar receive immediately is preferable to a dollar received at some future date. This led to the development of discounted cash flow (DCF) techniques to take account of the time value of money. One such DCF technique is called the net present value method. TO implement this approach, find the present value of the expected net cash flows of an investment, discounted at an appropriate percentage rate, and subtract from it the initial outlay of the project. If its net present value of the project is positive, the project should be accepted; if negative it should be rejected. Of two projects are mutually exclusive, the one with the higher net present value should be chosen.

The equation for the net present value (NPV) is

$$NPV = \left[\frac{R_1}{(1+k)^1} + \frac{R_2}{(1+k)^2} + \ldots + \frac{R_s}{(1+k)^s}\right] - C$$

$$= R_1 (PVIF_{k,1}) + R_2 (PVIF_{k,2}) + \ldots + R_s (PVIF_{s,s}) - C$$

Here R_1, R_2 , and so forth represent the annual receipts, or net cash flows; k is the appropriate discount rate, or the project's cost of capital; C is the initial cost of the project; and N is the project's expected life. The cost of capital, k, depends on the

riskiness of the project, the level of interest rates in the economy, and several other factors.

Table II.2

NPV Table

If...	**It means...**	**Then...**
NPV > 0	the investment would add value to the firm	the project may be accepted
NPV < 0	the investment would subtract value from the firm	the project should be rejected
NPV = 0	the investment would neither gain nor lose value for the firm	We should be indifferent in the decision whether to accept or reject the project. This project adds no monetary value. Decision should be based on other criteria, e.g. strategic positioning or other factors not explicitly included in the calculation.

II.2.4. Payback Period

The Payback period is defined as the number of years it takes a firm to recover its original investment from net cash flows. (Brigham, 1978)

Payback period method generally use only for smaller replacement projects or as a risk indicator in larger projects. Some features of the payback, which indicate both its strengths and weaknesses, are listed below:

1. Ease of Calculation. The payback is easy to calculate and apply. This was an important consideration in the pre-computer days.
2. Ignores Returns Beyond Payback Period. One glaring weakness of the payback method is that it ignores returns beyond the payback period. Ignoring returns in the distant future means that payback penalizes long-term projects.
3. Ignores Time Value of Money. The timing of cash flows is obviously important, yet the payback method ignores the time value of money.

II.2.5.Break Even Point (BEP)

The Break-even Point is, in general, the point at which the gains equal the losses. A break-even point defines when an investment will generate a positive return. The point where sales or revenues equal expenses. Or also the point where total costs equal total revenues. There is no profit made or loss incurred at the break-even point. This is important for anyone that manages a business, since the break-even point is the lower limit of profit when prices are set and margins are determined.

Achieving Break-even today does not return the losses occurred in the past. Also it does not build up a reserve for future losses. And finally it does not provide a return on your investment (the reward for exposure to risk).

Break-even analysis is a useful tool to study the relationship between fixed costs, variable costs and returns. The Break-even Point defines when an investment will generate a positive return. It can be viewed graphically or with simple mathematics. Break-even analysis calculates the volume of production at a given price necessary to cover all costs. Break-even price analysis calculates the price necessary at a given level of production to cover all costs. To explain how break-even analysis works, it is necessary to define the cost items.

Fixed costs, which are incurred after the decision to enter into a business activity is made, are not directly related to the level of production. Fixed costs include, but are not limited to, depreciation on equipment, interest costs, taxes and general overhead expenses. Total fixed costs are the sum of the fixed costs.

Variable costs change in direct relation to volume of output. They may include cost of goods sold or production expenses, such as labor and electricity costs, feed, fuel, veterinary, irrigation and other expenses directly related to the production of a commodity or investment in a capital asset. Total variable costs (TVC) are the sum of the variable costs for the specified level of production or output. Average variable costs are the variable costs per unit of output or of TVC divided by unit of output.

The Break-even Point analysis must not be mistaken for the Payback Period the time it takes to recover an investment.

$$BEP = TFC / (SUP - VCUP)$$

where:

- BEP = break-even point (units of production)
- TFC = total fixed costs,
- VCUP = variable costs per unit of production,
- SUP = selling price per unit of production.

II.2.6. Economical Life

The measurement of an economical life of an asset is used to determine when that certain asset needs to be replaced. Indeed, the replacement will be done if it is economically better than using the old asset (defender).

The economical life of an asset is a point of time period when the total annual cost occurring is minimum. The total annual cost consists of annual operation cost and maintenance cost. Annual operation and maintenance cost usually increase as the usage time of the equipment is longer. Whereas the annual cost from investment cost will decrease the longer the usage of the equipment.

Due to the replacement analysis will compare defender and challenger in the base of its economical life, thus prior to comparing, it is necessary to be aware of the calculation of economical life. This calculation will be easily done if the cash flow can be predicted with high certainty. This analysis will only engage the cost of annual equivalent in the end of every year as long as the age of that certain equipment. Scientifically, the annual equivalent cost will decrease with the increasing usage of an asset. This decrease will only occur for a certain usage period, subsequently if the usage period is increased, costs will increase.

II.2.7. Inflation

Basically, inflation is defined as a time when the cost of goods, services, or other general production factors increase. The inflation will make the buying capability of money decrease from time to time. (Pujawan, 2004)

Pujawan (2004) mentions that with the occur of inflation, it will make the present worth of money will be less in the future. In its correlation with financial analysis, there are several things that can be done concerning inflation and deflation, such as:

- Convert all cash flow to present worth of money to eliminate the effect of inflation, then use regular interest rate (interest rate without inflation effect in interest formula). This method is more suitable for analysis before taxes because all of the components of cash flow is inflated in the same rate.
- State future value as present value and use interest rate that include inflation effect. Interest rate that has considered inflation effect is called inflated interest rate or combination inflation interest rate.

Pujawan (2004) mentions, if i_f is the interest rate after inflation that should be obtained by an investor from its investment that needs initial cost as much as P and i_f is the inflation rate, therefore the future value from the investment after n year is:

$$F = P\ (1+i_f)^N$$

Where i_c is the combination of inflation interest rate that shows the minimum rate required for an acceptable investment. Combination of inflation interest rate can be explain with:

$i_c = i_{interest\ rate} + i_{inflation} + (i_{interst\ rate}) \times (i_{inflation})$

II.2.8. Forecasting

Forecasting is very important tool to make an estimation of the demand. There are two approach that can be use in making a business forecasting, which are quantitative analysis and qualitative analysis. Quantitative analysis usually using mathematical approach with causal and historical data. While qualitative analysis usually using subjective approach which is linking with decision making, such as emotion, self experience.

II.2.8.1. Quantitative Method

Quantitative forecasting method consist of:

- Decomposition

  This method using time series data. Time series data usually has four components, which are trend, seasonality, cycles, and random variation.

  - Trend (T) is the change tendency (up or down) of the data
  - Seasonality (S) is repeated pattern that often happen in a certain period of time.
  - Cycles (C) is the pattern that happens in data itself that always repeating after several years.
  - Random variation (R) is the variation that has a random characteristic, so it is difficult to guess.

  - General pattern to observe this data type is:

    Demand = T x S x C x R

- Moving average

  This method is functional if it can be assumed that demand is stable in all time. The formula is:

$$\text{Moving Average} = \frac{\sum \text{demand in n period}}{n}$$

  n is the total period use in moving average. E.g. trimester becomes 3MA (3 months moving average).

- Exponential smoothing

  Exponential smoothing is a forecasting method that fairly easy to use because it doesn't need many input data. The formula use is as follow:

  Future period forecast = Last period forecast + α (actual demand – Last period forecast).

  A is a constantan between 0 to 1. Thus the formula can be written as follow: $F_t = F_{t-1} + \alpha (A_{t-1} - F_{t-1})$

  F_t = New forecast

  F_{t-1} = Last forecast

  A_{t-1} = Last period actual demand

  α = constantan between 0 to 1

  α (smoothing constant) can change, it depends on the assumption of changing that will happen to the data. Forecast error can be calculated as follow: Forecast error = Demand – Forecast

There are some measurement to know the forecast error height, which are: MAD (mean absolute deviation), MSE (mean squared error), and MAPE (mean absolute percent error).

$$MAD = \frac{\sum |\text{Forecast error}|}{n}$$

- Trend adjustment exponential smoothing

  The basic concept of this method is the same as exponential smoothing that has been explained before, but with a little adjustment in trend line (trend adjustment). The formula is:

  Forecast (including trend) (F1Tt) = new Forecast (Ft) + Trend correction (Tt)

  To obtain smoother trend line, it is necessary to use constantan assumption (β), the formula is:

  $T_t = (1-\beta)T_{t-1} + \beta\,(F_t - F_{t-1})$

  T_t = smoother trend for t period

  T_{t-1} = smoother trend for previous period

  T_{t-1} = constantan for smoother trend (assumption)

  F_t = forecast for t period

  F_{t-1} = forecast for previous period

- Trend projection

  This method is used with a consideration of cause and effect relationship of affecting variables. Variables that affect called independent variable

(Xi), whereas the variable affected called dependent variable (Y). Trend line assumed to be linear, thus:

$$Y = a + bX$$

Y = dependent variable

a = intercept coefficient

b = slope coefficient

X = independent variable

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n (\sum X^2) - (\sum X)^2}$$

b = slope

$\sum$ = sum sign

X = independent variable

Y = dependent variable

n = sample size

After the b coefficient is obtained, the coefficient a can be calculated:

$$a = Y - bX \text{ or } a = \frac{\sum Y - b\sum X}{n}$$

- Linear regression causal model

  The principal of this method is the same with trend projections that had been explained. The different is in the independent variable, which is not in terms of time, but a variable that predicted will affect dependent variable (Y). The equation of linear regression line is as followed:

$$Y=a + bX$$

Y = dependent variable

a = intercept coefficient

b = slope coefficient

X = independent variable

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n (\sum X^2) - (\sum X)^2}$$

b = slope

$\sum$ = sum sign

X = independent variable

Y = dependent variable

$\bar{X}$ = X average

$\bar{Y}$ = Y average

n = sample size

After the b coefficient is obtained, the coefficient a can be calculated:

$$a = \frac{\sum Y - b\sum X}{n}$$ or

$$a = \bar{Y} - b\bar{X}$$

This regression estimation accuracy is very much affected by the deviation of all independent variable (X) data. If all independent variable data is right in the regression line, the error is near 0. In the contrary, if the

variable data further away from regression line, the error degree is high. Error can be calculated using this formula:

$$Se = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

Se = standard error estimated

II.2.8.2. Qualitative Method

There are four kind of forecasting using qualitative approach, they are:

- Jury of executive opinion

  This approach using opinion of the executive in estimating the demand.

- Sales force composite

  This method using combination of several sales person's opinion in estimating the demand in each area, then the result is use for determine the total demand estimation.

- Delphi method

  This method using interactive process that involves the executive that has been placed in several different areas to make estimation.

- Customer market survey

  This method using many advise and suggestion from customer or potential customer according to their purchasing plan in he future.

II.2.8.3. Time Series Method

Time series data usually daily, weekly, monthly, or every three months. It is all depend on the data available and the fluctuation of the data itself. If the data is change quickly, it is better if the forecasting is not done for long period.

II.2.9. Sensitivity Analysis

Parameter values which become basis in feasibility analysis can not be separated from error factor, meaning those parameter values can be smaller or bigger from the estimation that have been made before. Changes in parameter will cause changing in output. Changing in output will affect the decision from one alternative to other alternative. If the changing in parameter values changes the decision, so this decision will consider as sensitive with the changing in those parameters. To know how sensitive is the decision with the changes in parameters, sensitivity analysis must be done.

Pujawan (2005) said that sensitivity analysis done with changing the value from one parameter in a certain time in order to see how its affect the acceptability of an investment alternative. Sensitivity analysis will depict how far a decision can survive with the changes that might happen, this analysis also give a limit value of tolerance for consideration in dealing with parameter so it can change the decision in investment. In fact, if the maximum limit of tolerance is exceed so the decision must be reanalyze.

II.3. Segmenting, Targeting, Positioning

The objective of segmentation is to examine differences in needs and wants and to identify the segments (subgroups) within the product-market of interest. (Cravens, 2000) Each segment contains buyers with similar needs and wants for the product category of interest to management.

Market targeting consist of evaluating and selecting one or more segment whose value requirements provide a good match with the organization's capabilities. (Cravens, 2000) The purpose of targeting is to select the people or the organization that management wishes to serve in the product-market.

The positioning objective is to have each targeted customer perceive the brand distinctly from other competing brands and favorably compared to other brands. (Cravens, 2000)

II.4. Marketing Mix

A Marketing mix is the division of groups to make a particular product, by pricing, product, branding, place, and quality. The fundamentals of marketing typically identifies the four P's of the marketing mix as referring to:

- Product - A tangible object or an intangible service that is mass produced or manufactured on a large scale with a specific volume of units.
- Price – The price is the amount a customer pays for the product. It is determined by a number of factors including market share, competition, material costs, product identity and the customer's perceived value of the product.
- Place – Place represents the location where a product can be purchased. It is often referred to as the distribution channel. It can include any physical store as well as virtual stores on the Internet.
- Promotion – Promotion represents all of the communications that a marketer may use in the marketplace.