

The Feasibility Study Framework of Mixed Use Construction Project in Bitung, North Sulawesi, Indonesia

Manlian Ronald A. Simanjuntak¹, Yosua Christananda²

¹Professor in Construction Management, Graduate Program of Master of Civil Engineering, Faculty of Science & Technology, Universitas Pelita Harapan, Indonesia

²Graduate Program of Master of Civil Engineering, Universitas Pelita Harapan, Indonesia

Abstract: *The feasibility study is project analysis to provide an overview whether the project feasible or need to be review further. The feasibility study is usually done in early stage of a project. The purpose of feasibility study is established whether the project is feasible or not, help to identify the best option, and to minimize the risk. There are several aspects in feasibility study such as economic aspect, market aspect, management aspect, design aspect and others. Economic and market aspects in feasibility study will be discussed more in Mixed Use Construction Project in this research. Economic feasibility study is the profit analysis from investment. This economic analysis will use engineering economic method such as net present value, break-even point, return on investment and others method to give to provide clear overview. Market feasibility study is the analysis of the market condition such as demand, capital income, and competitor around the project. Market analysis will use SWOT analysis method and Marketing Mix method to get the maximum result. Bitung is located in North Sulawesi, Indonesia. Bitung is located in strategic location that lead to rapid economic growth. Mixed Use Construction Project in Bitung is the pilot project that has failure risk. Therefore, the feasibility study is important to minimize the risk.*

Keywords: *Framework, Feasibility Study, Economic Feasibility, Marketing Feasibility, Mixed Use Building, Bitung, Indonesia.*

INTRODUCTION

Increased global policy uncertainty, particularly related to trade agreements and the policy of normalizing interest rates in the US, contributing to the financial market turmoil in the fourth quarter of 2016. The turmoil in the stock market and the bond market surged up to the US presidential election in November. Risk of Indonesia's growth in 2017 include: policy uncertainty and financial turmoil continues, the sluggish global trade and weaker

growth in countries - developed countries, as well as the slowdown of the Chinese economy that continues. Unfavorable economic conditions make slowing growth in the construction world. Developers and investors require consideration in the decision making process so that analysis of the feasibility study (Feasibility Study) on the need to assess the success of a project and reduce the risk of that happening.

Husnan and Suwarsono (2000), a feasibility study is research on whether or not a project (typically the investment project) implemented successfully. Feasibility study of a project is usually done in the beginning of a project. This phase is very important to know success level of a project before the investment plan. In addition, the objective of feasibility study to provide recommendations should the project concerned whether feasible or should be reviewed.

Economics is a very important aspect to ensure the investment value should go well. Due to the economic aspect can determine investment plans through the calculation of costs and the expected benefits, by comparing between expenditure and revenue, such as the availability of funds, cost of capital, the ability to pay back the investment that has been done in the allotted time, and be able to assess whether the investment run in accordance with the plan. Economy aspect can also be regarded as the basis of realized or not an investment is desired. Therefore in assessing the investment should really pay attention to whether the funds provided can be used optimally in order to achieve the objectives of the company.

Market aspects and aspects of economics in the feasibility study related to each other. Aspects of the market determining whether or not a request (demand) in the market. This will affect to the calculation of profit and rate of return (Internal Rate of Return) in the economic aspect. There are two types of markets, namely the market potential in the present and the time will come. Understanding of the

potential market is the overall amount of the product or group of products which may be sold in a particular market in a particular period. Future market is forecasting and measurement of demand in the future to reduce the occurrence of opposites between state earnest with what the forecasting results.

Mixed Use is an urban area that is designed in an integrated manner with a fairly high building density and a combination of land functions that are mix. Mixed Use this concept evolved around the beginning of the 19th century in the United States pioneered by Clarence Stein and Clarence Perry, and in Europe, particularly in France by Le Corbusier.

Regional Mixed Use should be able to become self-sufficient neighborhood where residents can live, work, and be creative in the region. The concept is a solution to the present condition filled with clutter such as congestion. Occupants can also save on transportation costs because of the distance between home and place of work are very close. In fact, this concept allows its citizens to use bicycles or just walk away. Not only optimize the use and public transport services, this concept can also ease the burden on the city's infrastructure.

Bitung Mixed Used Development in Bitung is a pilot project that would meet the needs of the population in one area. Bitung Mixed Development Project consists of a hotel, hospital, school and Mall (Retail) are standard internasional. Letak this project is located on the main road Sam Ratulagi. Bitung Mixed Use has design open-water concept development, low-maintenance, dynamic environment, and view directly into the maluku sea.

Research Questions

Based on the background described, the problems that will be solve in this research as follows:

1. What is the indicator project feasibility study with respect to economic and market aspects?
2. What is the framework result of the economic and market analysis of the feasibility study?
3. What is the recommendations for improvement of the results of this study?

Research Objectives

From the issues above, the objective that the writer will aim from the research are:

1. Determine the indicator project feasibility study with respect to economic and market aspects.
2. Create the framework of the economic and market analysis of the feasibility study.
3. Give the recommendations for improvement of the results of this study.

LITERATURE STUDY

In this section, the theoretical basis to support this research will be explained. The theoretical basis can from books and journals of relevant research to

support this research. Among them will be discussed on the feasibility study, economic feasibility study, market feasibility study, and Mixed Use.

Feasibility Study

The meaning of the feasibility study of a project according to Husnan and Suwarsono (2000) is a study about whether a project (usually an investment project) implemented successfully. Assessing the feasibility of a project aimed at studying the proposed project in a professional manner in all respects in order to be accepted and implemented later after really can achieve results as planned.

Nitisemito and Burhan (2009) says understanding the feasibility study is essentially a method of assessment of a business idea about the possibility of whether or not a business idea is implemented. Feasibility study (feasibility study) is often viewed as a difficult and complex job, because it is always associated with large projects managed by experts from various disciplines as well as the use of complex methodologies or techniques. Image like this is not only found among ordinary people, but also on the part of scholars.

"Feasibility study is the evaluation and analysis of the potential of the proposed project which is based on extensive investigation and research to support the decision-making process". Similarly, O'Brien (2005) said that the feasibility study is a preliminary study to formulate the information needed by the end user, resource requirements, costs, benefits and feasibility of the proposed project.

According to Drs. Suratman M.si (2001: P6) there are several aspects that are examined in the feasibility study are:

- The legal aspect, social, economic and cultural
Particular, legal, social, economic and cultural received less attention from the owner or developer or feasibility study authors. In fact, precisely this aspect is the basis of other aspects in determining feasible of investment project. Some of project are canceled or delayed because of the legality aspect or the claims of society.

- Market and marketing aspect
Market and marketing aspect is the most important aspect in feasibility study. Market aspect is usually analyzed in the beginning compare to another aspect for investment project. The project objective is to fulfill the market demand.

- The technical aspect and technologies
Study the technical aspects and technologies focused on the assessment of the viability of the project in terms of technical and technology. The assessment includes determining the location of the project, determining the project building model, the election machinery, other equipment, applied technology, and lay out as well as the determination of the scale of the operation.

- Management Aspect

The basic concept of management is planning, organizing, implementing and controlling an activity that aims to allocate resources so that has added value. In connection with the planned establishment of a project management aspects need to be assessed so that the project established and operated.

- Economic Aspect

In conducting the feasibility study, the financial aspect is the most important factor. It means that although other aspects are feasible, but if there are no available funds, the project will be vain. Financial aspects relating to how to determine number of investment and allocated funding efficiently to give the benefits for investors. Meanwhile, the search for the source of funds, investors should be able to determine the level of capital costs (cost of capital) the least that can be closed with the expected rate (expected rate of return) of the proposed investment project.

Economic Feasibility Study

Kadariah (2001) explains that economic aspect is whether the project will contribute or have a significant role in economic development entirely, and whether its role is large enough to justify the use of scarce resources. Because it covers the overall economic activity, so that the economic and social aspects are closely related and cannot be separated.

The economic aspect is intended to determine the level of project feasibility from economic aspect, while the methods used to evaluate projects against the economical aspect of this work is investment criteria. The parameters used to measure these criteria are: Net Present Value (NPV), Future Value (FV), Internal Rate of Return (IRR), Return on Investment (ROI), Break Even Point (BEP), Benefit Cost Ratio (BCR) and Sensitivity Analysis.

- Net Present Value

The difference value between the money received and the money spent by considering the time value of money or knowing the value of money at this time.

- Future Value

The value of money in the future compare to the value of money received or disbursed at the present time, taking into account the interest rate each period within a certain timeframe.

- Internal Rate of Return

The method to calculate the value of investment taking with considering the interest rate that equates the present value of the investment with the present value of net cash receipts in the future.

- Return on Investment

The ratio of money gained or lost on an investment relative to the amount of money invested.

- Benefit Cost Ratio

The comparison between the revenues and the total costs investment. Within the limits of the amount of the B/C can be determined whether an investment or venture favorable or unfavorable.

- Break Even Analysis

A point where the costs or expenses and revenue are balanced so there is no loss or gain.

- Sensitivity Analysis.

The analysis has been carried out as a result of changes in the parameters of production to changes in production systems performance in generating profits.

Market Feasibility Study

Analysis of market aspects is an important step after identifying business opportunities and the feasibility study is an early stage, so it is possible to start a more detailed feasibility study on the financial aspects. Market aspects of the analysis phase is the first phase of the analysis, because the basis for the scientific justification of the business establishment. Understanding the market demand of a product according to Kotler and Keller (2009) is the total amount will be purchased by a particular group of consumers in a specific area in a specific time in a specific marketing environment and within a specific marketing programs. The purpose of market analysis is to determine how widespread the relevant product market, how and how much growth in demand can be met by consumer companies.

The market analysis can be done qualitatively, namely to identify, isolate and make the market description. In addition, market analysis can also be done by quantitative, such as calculating the amount of estimated future sales of products a year. There are two methods to determine market analysis, there are:

- SWOT Analysis

Strategic planning method used to evaluate the strengths (strengths), weaknesses (weaknesses), opportunities (opportunities) and threats (threats) in a project or a business venture. In a SWOT analysis of location data about the project if there are competitors in the vicinity of the project, the income and purchasing power of the local community.

- Marketing Mix

The combined method that analyzes 4P (product, price, place and promotion) are interlinked with one another, with the aim to meet the needs and customer satisfaction as well as achieve its goals.

Bitung, North Sulawesi

Bitung is one of the cities in North Sulawesi that has rapid economic growth because it is located near the port and near the central government, Manado. Beside that it is the largest producer of tuna in Indonesia. Geographically, Bitung city is located at 1° 23'23" - 1° 35'39" N and 125° 1'43" - 125° 18'13" east longitude. The land area of Bitung has area 33.279,10 ha, divided into eight sub-districts and 69 villages. As can be seen in Figure 1.



Figure 1: Bitung, North Sulawesi
 Source: Google Map

The population in Bitung reach 187.652 people in 2010. This number continues increase, the population in 2014 is 202.204 people. In 2014, every km² occupied by a population of 612 people. Of the total population of working age (15 and over), amounting to 62 percent of urban residents Bitung included into the labor force. Labor force participation rate (LFPR) has increased every year.

Project Overview

Bitung Mixed Use is the pilot project. It located on the main road Sam Ratulangi and sub street sukamto street. The land area that will be used for Bitung Mixed Use development is 9.184m². This area consists of a mall (retail), International hospitals, five star hotel and school. This building is planned to have 27 floors and two basements with total height 109 meters and a total Gross Floor Area (GFA) reached 56.400m². For detail area per level of Bitung Mixed Use can be seen in Figure 2.

This project will fulfill the needs of people of integrated area. People can work, study, life and get entertainment in one area. Bitung Mixed Use has open-air design concept, low-maintenance, dynamic environment, and view directly to the Maluku sea.

Table 1: Mix Development Ratio

No.	Building	Percentage	Area (m ²)
1	Hospital	14,8%	8.140
2	Mall / Retail	65,1%	35.700
3	School	8,6%	4.700
4	Hotel	11,5%	6.300
	Total	100,0%	54.840

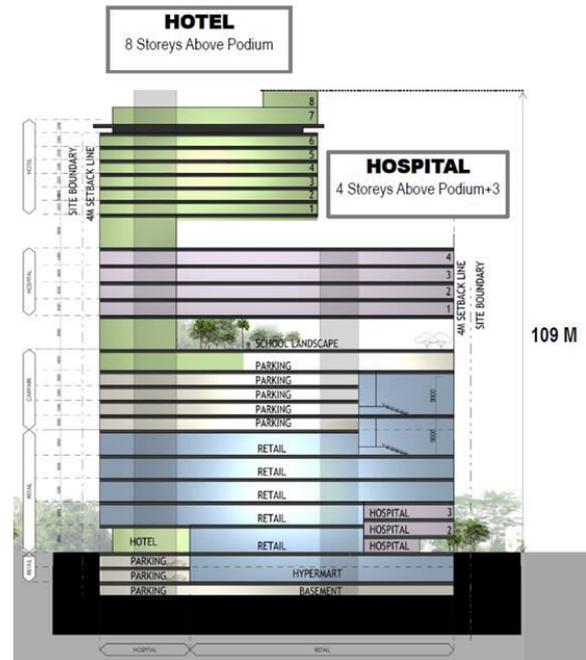


Figure 2: Area Level of Bitung Mixed Use

RESEARCH METHODOLOGY

Sugiono (2010) describes the research methodology is a scientific way to get data with a specific purpose. Under these conditions there is four key words to note are a scientific way, the data, the purpose and usefulness. Rational means the research activities carried out with reasonable. Empirical means the ways that do and can be observed human senses. Systematic means that processes are carried out in research to use certain steps that are logical.

Research Process

The research methodology is a set of rules, activities, and procedures used by the researchers. The methodology is also a theoretical analysis on a way or method. The Research is a systematic investigation to improve the amount of knowledge. It is also a systematic and organized effort to investigate specific issues that need answers.

In general, the research process is divided into three: the preliminary phase, Analysis phase and the final phase or result and conclusion phase as describe on figure 3. The preliminary phase starts from the issue of research into the problem of research. The research problem is the issue that will try to be solved in the research. The analysis phase starting is start from data collection, literature study and data process. Literature study can get from books and journals of relevant research. After that the data will be processed and analyzed using the formula contained in the study of literature. The last stage is a

discussion of the results of the analysis and the results of research which contains conclusions and recommendations.

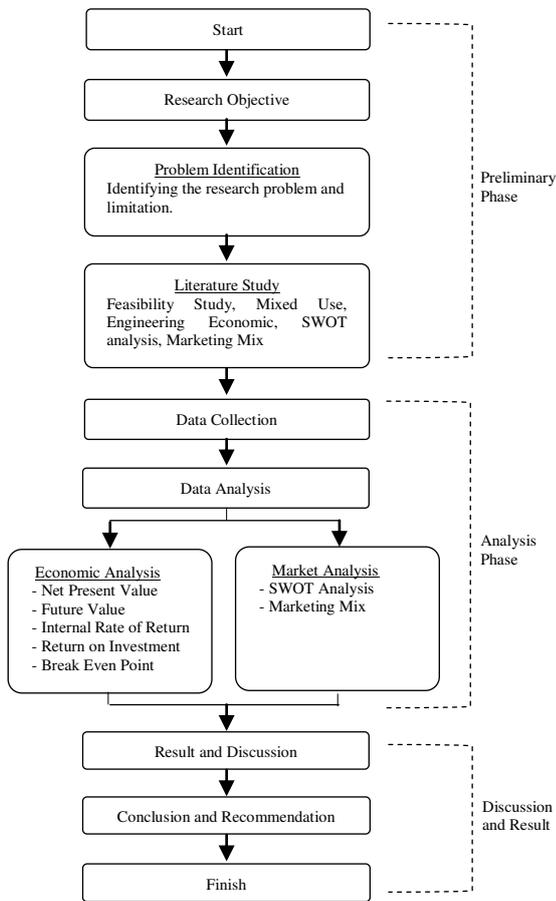


Figure 3: Research Process

Research Instrument

Research instruments are all tools used to collect, examine, investigate a problem, or collect, process, analyze and present data in a systematic and objective with the goal of solving a problem or test a hypothesis. In this study the author uses primary data and secondary data were then analyzed using the formula contained in literature study.

The research instrument (data) to support this research can be obtained from primary data and secondary data.

- Primary data

The data obtained by researchers directly (first hand), while secondary data is data obtained by researchers from existing sources. Primary research data obtained from PT. Lippo Karawaci Tbk, the data include: the building site plan, a total Gross Floor Area (GFA), the estimated cost (Budget), the period of analysis, and the interest rate that is used.

- Secondary Data

Data obtained or gathered researchers from a variety of sources that already exist (researchers as second hand). In this study, secondary data obtained

from various Central Statistics Agency (BPS) Bitung, including data: demographic, topographic, and income residents of the city of Bitung and other data that support the research. Moreover, I also get the data from reference books and journals for the analysis of the economic aspects include the Net Present Value, Future Value, Internal Rate of Return, Return on Investment, Break even Analysis and reference to the analysis of aspects of the market such as SWOT analysis, and marketing mix obtained from books and related journal.

RESEARCH RESULT

Base on the research method, the primary data and secondary data will be process in this section.

Economic Feasibility Analysis

The primary data such as the building site plan, a total Gross Floor Area (GFA), the estimated cost (Budget), the period of analysis, and the interest rate will be analysis using engineering economic formula that has been explain in literature study. The total investment can be get from the total construction cost. After that this data will be calculate using net present value. The total investment and interest rate will be used to calculate the value of money in the future. Using this data Internal Rate of Return, Return on Investment, Benefit Cost ration can be determined. By comparing the total investment cost and the income that will be get, we can get the break event point. After we get all the result, final step is sensitivity analysis. From the result we can determine the project is feasible or not. Framework of economic feasibility study can be seen in figure 4.

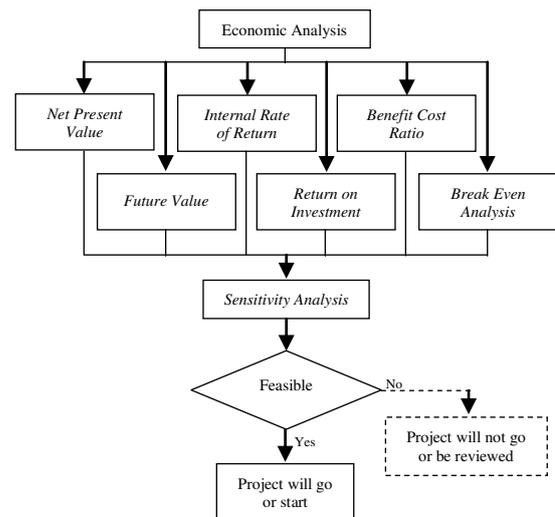


Figure 4: Economic Feasibility Study Framework

Market Feasibility Analysis

In this research, secondary data is used to SWOT analysis and Marketing Mix method. SWOT analysis

will determine the strength-weakness and opportunity-treat of Bitung Mixed Use Development. The location such as demographic and topographic will be used. The opportunity and treat will look the competitor around the project. Marketing Mix analysis will determine the market segmentation using price, product, promotion and people approach. The capital income data of Bitung will be used. Market feasibility study framework can be seen in figure 5.

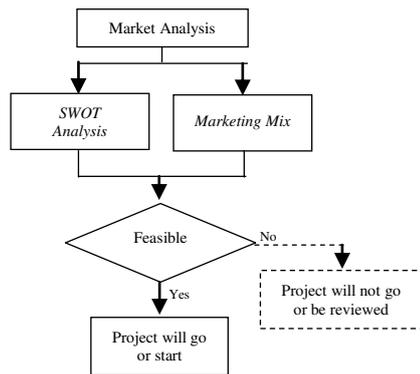


Figure 5: Market Feasibility Study Framework

CONCLUSION

Mixed Use development is the pilot project in Bitung, North Sulawesi. There is a change of failure in project. Therefore feasibility study is used to determine the viability of an idea or project. The objective of feasibility study is to ensure that a project is legally and technically feasible and economically justifiable. From feasible study can give the description whether a project is worth or not to be invested.

Based on this research Feasibility study is very important to be conduct in early stage of the project. As explained before feasible study has a lot of advantages. The advantages of doing feasibility study are decided the project will go or not, minimize the risk of project failure, determine the best project alternative, knowing the profit or lost from investment.

Economic feasibility study help the organization determine the viability, cost and benefits associated with the project before financial resources are invested. It can be also serves as an independent project assessment, and enhance project credibility, as a result. It help the decision maker determine the economic benefit to the organization that purpose system will provide.

Market feasibility Study help the organization determine the market demand, strength and weakness of the product, the opportunity and competitor. It help the decision maker determine the product that will be make, market segmentation and the price of the product.

In conclusion the writer strongly recommends doing feasibility study. The more feasibility study aspect is being analyzed, the result will be more accurate.

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