

FEASIBILITY STUDY VANNAMEI (*Litopenaeus Vannamei*) SHRIMP FARMING BUSINESS ESTABLISHMENT IN REMBANG

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ABSTRACT

The feasibility analysis of shrimp farming business establishment aims to analyze the feasibility of shrimp farming business establishment in Rembang in terms of aspects of industrial environment, market and marketing aspects, technical aspects, legal, human resources, and financial aspects. The unit of analysis used in this study are individuals (informants) as much as 6 informants.

The feasibility study examined establishment of this business through six aspects, namely, the industrial environment aspects, market and marketing aspects, technical aspects, legal aspects, human resources, and financial aspect. Six aspects indicate that business establishment of vannamei shrimp farming in Rembang is acceptable and feasible for execution.

To calculate the feasibility analysis of investment, used four methods of analysis, using the PP (Payback Period) which paid-back after 1 year and 4 months, PI (Profitability Index) value is 3,17, NPV (Net Present Value) in fifth year is Rp 646.792.562,- , and IRR (Internal Rate of Return) reach 42,89%. Overall results indicate that the business establishment of vannamei shrimp farming in Rembang is acceptable and feasible for execution.

Keywords: Feasibility Study, Business Establishment, Family Business, Analysis

INTRODUCTION

The sea is a liaison that has various functions related to several economic sectors. These include the economy of the farmers and their families, the fulfillment of the market for shrimp, the sustainability of cold storage, and the national income. Likewise with a variety of sea products that are currently popular as one of the main sources of nutrition besides chicken and beef. According to data from the Badan Pusat Statistik the level of consumption of fish and shrimp is higher than the level of chicken and beef consumption in almost last 10 years.

Announced by Republika Online, "the last three years shrimp exports to the US are controlled by India, but in 2016 shrimp exports from Indonesia are number one in the US", said Nilanto Perbowo at the office of KKP Jakarta. This is certainly one of the proud achievements as a country with a more dominant maritime territory and with untapped potential. Furthermore, the government's target in the future is an increase in exports by 300% by 2019 (Ministry of Industry, 2015). Seeing optimism The government makes the authors think what can be done to realize the government target, because with the availability of vast land that stretches along the coast, it seems that the target is not impossible to be realized. Especially with the increasing number of new methods in cultivation, which allows farmers to obtain multiplication results with minimal land. Another important point is that Indonesia has a geographical area where

Indonesia is an EMS-free country (Early Mortality Syndrome) that attacks other shrimp producing countries such as Thailand, China and India (KKP, 2015).

Shrimp farming continues to dominate cultivation of crustaceans, with three main species *Penaeus monodon*, *P.chinensis*, and *P.vannamei*. *Litopenaeus vannamei* is a commercially cultivated shrimp species. The vannamei shrimp have a growth rate such as tiger shrimp that is 1 - 1.5 g / week but can be treated with high stocking density (60 - 150 / m²) and some even reach 400 / m², can live in the salinity range from 0.5 to 45 ppt , Low protein requirement in feed 20-35%, and has a relatively higher survival rate of 85% compared to tiger shrimp which only has 60% (Briggs et al, 2004). The vannamei shrimp farming business in Indonesia is very promising because it is supported by large aquaculture fields. Broader agricultural land that is exploited will bring environmental changes, will lead to various diseases both infectious diseases and non-infectious diseases. Technical studies of shrimp farming need to be done so that shrimp farms can continue and reduce the negative impact on the surrounding environment and prevent the spread of disease (Sumardi et al, 2008). The vannamei shrimp farming is a capital-intensive venture so it is necessary to study the financial aspect to find out how feasible vannamei farming is in its current state.

The author has some land in Rembang, Central Java that is potentially converted to shrimp farming location and wants to pursue shrimp farming business seriously. But on one occasion there must be a few things to ensure that all land conversion processes go well. Therefore, the authors feel the need to conduct feasibility studies more focused on technical aspects as well as financial aspects with the title Feasibility Study Vannamei (*Litopenaeus Vannamei*) Shrimp Farming Business Establishment In Rembang.

LITERATURE REVIEW

Business Feasibility Study

Business feasibility study is a study that aims to decide whether a business idea is feasible to implement or not. Business ideas are eligible to apply if they can bring greater benefits to all stakeholders rather than their negative impact (Suliyanto, 2010).

The business feasibility study according to Husnan and Muhammad (2009) is a study of whether the project is built within a certain time or not. Feasibility studies can be used as a clearer focus for businesses or business plans that have a logical sequence that allows to reach targets or avoid companies from uneconomic investments. This research requires cost, but the cost can be minimized with analysis of this feasibility study.

The category of business feasibility study is divided into three categories (Subagyo, 2011), namely: new business establishment (creating a new business), business development (developing of business), and the purchase of business existing (business acquisition). The feasibility study category that will be conducted on this occasion is a business feasibility study in developing the business because the researcher has an existing business and has plans to be developed further. According to Suliyanto (2010) at the stage of forming a new business (creating new business), the aspects that need to be addressed are (1) Legal Aspects, (2) Environmental Industry Aspects, (3) Marketing and Market Aspects, (4), (5) Management and Human Resources, and (6) Financial Analysis. In the business development phase, the aspects analysis that will be discussed in business feasibility study is (1) Environmental Industry Aspect, (2) Marketing and Market Aspects, (3) Technical and Technological Aspects, (4) Management and Human Resources Aspects, (5) Financial Analysis. The legal aspect is still used in business development studies in this research because development is done elsewhere and requiring some new permits.

Market and Marketing Aspects

Market is a group of buyers and sellers of goods or services. As a group, the buyer determines how much demand the goods and as a group of others, the seller determines how much the supply of goods (Mankiw, 2009).

Analysis of market and marketing aspects plays a very important role in the development of business because the main source of income comes from the sale of products produced. The analysis of the market aspect analyzes the number of products that competitors offer. While the analysis of marketing aspects to analyze the way or product strategy produced can be up to the consumer with more efficient than competitors (Suliyanto, 2010).

The marketing strategy of conventional goods, shopping goods and special goods varies. If the product is manufactured in the form of conventional goods then the distribution strategy for manufactured goods is available wherever it is very important. Whereas if the product is a special item then the promotion strategy to ensure goods to be sold very special becomes very important. As well as industrial goods consumption goods can also be divided into several classes (Suliyanto, 2010): (1) Raw materials, (2) Semi-finished materials, (3) Inventory operations.

Marketing strategy that supports the achievement of marketing in accordance with the wishes, namely (Purwana, 2016): Strategy (1) Segmenting (market segmentation), (2) Targeting (market setting), (3) Positioning (market positioning), or it is known by STP Strategy.

Environmental Aspects and Industrial Structure

Every business must have consideration on the environmental aspects of the industry. This is because the environmental factors of many or few industries have a considerable influence on the smoothness of business / business. The analysis done in the environmental aspects of the industry is PEST analysis (political, economical, social and cultural, and technological) and the five power analysts (Suliyanto, 2010). According to Porter in (Suliyanto, 2010) divides the five forces that determine the level of competition in an industry, namely: (a) entry of newcomers, (b) threat of substitution products, (c) bargaining power of buyers, (d) Bid on suppliers, (e) Competition among existing competitors.

To formulate a marketing strategy, is supported by SWOT analysis (Strength, Weakness, Opportunity, Threat) that is comparing internal company environment condition (strength and weakness) with external company environment condition (opportunity and threat) (Kodrat, 2009) .

Financial aspect

Financial aspect is a very important aspect in preparing or running a business. In preparing a business, the financial aspect becomes the main reference to the business either to be created or that has been made to assess whether the business is feasible to run or not. A profit-oriented business will decide to run a business idea if the business is financially profitable, while a non-profitited business requires a financial feasibility study to answer the question of whether the business idea will continue to run in an effort to carry out its social mission with revenue Which he received (Suliyanto, 2010).

The financial aspect includes information and data from all other aspects to be incorporated in the financial statements. The financial statements will be analyzed by means of investment valuation criteria, namely: Net Present Value, Internal Rate of Return, Payback Period, and Profitability Index (Muslich, 2009).

Technical Aspects

Frequent business / business failure is unable to face technical problems. Therefore, technical aspect analysis is used to answer the question of whether the business is technically feasible or not (Suliyanto, 2010). Things that need to be analyzed in technical aspect in this research are: (1) selection of business development location, (2) determination of business place layout, (3) selection of machine and equipment (4) Determination of optimal production scale

Aspects of Management and Human Resources

Human resource aspect is an important aspect and needs to be analyzed as well as development materials from a business / business. The role of human resources is no longer as a technical exercise, but as a partner in the company to be actively involved in the effort to realize

competitive advantage (Kodrat, 2009). Discussion in the aspect of human resources includes: organizational structure, procurement of labor, and compensation and benefits.

RESEARCH METHODS

This research is an applied research, that is research which concerns the application of a theory to solve a certain problem (Kuncoro, 2009). Applied research is conducted with the aim of applying, testing and evaluating the ability of a theory applied in solving practical problems (Neolaka, 2014).

The place of study is determined based on the location of the shrimp farming business that is Rembang district and begins in September - December 2016.

The sampling method uses Saturation Sampling because the population is small. Where Saturation Sampling method is sampling method by including all member of population as sample (respondent) research. This method aims to obtain data effectively and accurately in accordance with the needs required by researchers, so the data obtained is really accurate. Interview conducted to technician from PT. CP Rembang as a cultivation construction advisor, some local village apparatuses, other shrimp entrepreneurs in areas adjacent to target locations, feed suppliers as well as shrimp seeds, then middlemen that accommodate the crops.

The unit of analysis used in this study is the individual (informant). Individual analysis units are selected to explore individual knowledge and opinions as supporting data in the analysis. Informants used are parties directly related to the establishment of shrimp farming business in Rembang that are technicians from PT. CP Rembang as a cultivation construction advisor, some local village apparatus, other shrimp entrepreneurs in the area adjacent to the target location, feed suppliers and also shrimp seeds, the big middleman that accommodates the crops.

Data collection methods in this study using data promer and secondary. Primary data is data obtained by self through interview, observation and questionnaire (survey). Secondary data is data obtained from second source through document / literature study.

Data analysis from this research is done by analyzing every aspect that is studied, that is environmental aspect and industrial structure, market and marketing aspect, legal aspect, technical aspect, human resource aspect, and financial aspect.

The data can be declared valid if there is no difference between the reported by the researcher with what actually happened to the object under study. According to Yin (2009), there are four kinds of testing to validate data through construct validity, internal validity, external validity, and reliability.

RESULTS AND DISCUSSION

Environmental Aspects and Industrial Structure

PEST (Politic, Economy, Social, Technology)

1. Politic

Political factors are quite influential on the shrimp farming business, because so far the role of government is good and focus to improve fishery performance, especially the main export commodities of Indonesian fishery which is shrimp. In 2016, Indonesia ranks first to export shrimp products to the United States. This is certainly not separated from the efforts of the Ministry of Maritime Affairs and Fisheries that continue to encourage the fishery sector improved so that performance increases every year.

As for several priority program plans from the KKP (Ministry of Marine Affairs and Fisheries) for 2017, there is a pro policy on the shrimp farming sector, such as the procurement of 1000 windmills, the construction of 20 cold storages, optimization of fish factory sellers and the provision of some fisheries supporting tools such as “keramba” and others. The target of the cultivation sector in 2017 also increased from 19 million tons to 22 million tons or increased 3 million tons from the previous year.

Target and optimism of the government would be advantageous for shrimp farming which national shrimp industry become one of Indonesia's superior export products that can compete in the international market and its proof that the potential of the fishery sector, especially shrimp is still very big.

2. Economy

Indonesia's economic growth in 2016 has increased compared to growth in 2015 ranging from 4.7% to 5%. In accordance with the Decision of Central Java Governor concerning Minimum Wage of Rembang from year 2016 equal to Rp 1,300,000,- become Rp 1,408,000,- in year 2017 or increase about 8%. But this has little impact on business because this type of cultivation is not labor-intensive but capital-intensive, the operators required in the cultivation process amounted to three people, so the increase in Minimum Wage has not been assessed to have significant impacts. .

In 2016, shrimp production in other countries declined and this is predicted to occur in 2017, so for Indonesia it is an advantage that domestic shrimp sales will be better in the global market, and this is why by 2016 Indonesia led the Market Shrimp in the United States because India was in trouble.

3. Social

Shrimp is a favorite food in the world as well as in Indonesia. Indonesians like to consume shrimp or processed products. As shrimp paste is an original Indonesian product that is actually made from a type of rebon shrimp, it can be found in most cuisines in Indonesia. Likewise with petis that can be found especially in East Java who likes to process petis into typical foods such as rujak cingur, tahu tek, tahu campur, lontong kupang and many other dishes that use petis. This proves that the taste of shrimp is very popular and in accordance with the culture in Indonesia.

Shrimp is also protein-rich type of food that are very good for children during growth. Of course if the child's growth is good, then the child will become more active and tend to excel.

In addition, awareness of the quality of our food is improving now, so food suppliers should also be more careful to provide quality materials and conform to good standards. In shrimp culture industry, it is mandatory for the farmers to avoid the use of antibiotics, because antibiotics can leave a bad residue if consumed in the long run.

4. Technology

Technological growth today are very rapid, there are already many new technologies found to facilitate people in the activity, as well as in the shrimp industry. Shrimp cultivation that initially only uses traditional systems, along with technological developments started semi intensive cultivation system, intensive, and even recently there is a cultivation using super-intensive system. In addition to improve cultivation process, the latest cultivation system also applies environmentally friendly concepts by providing cultivation waste management. In addition, this new technology also makes land productivity better. For example, the land used for cultivation farms is generally 0.5 Ha per pond, but now more directed to a narrow land like 0.1 ha but capable of producing shrimp with larger tonnage.

One technology that will be used in this cultivation is the use of geomembrane for aquaculture ponds, because it provides more water stability than soil ponds, more efficient investment when compared to concrete ponds, and also its long economic life is about three years when compared with a plastic sheet just two years.

Aquaculture cultivation is also an aspect that is currently being developed by researchers because contamination of the environment today has become something that should be minimized because it can have a wide impact for farmers and surrounding communities. One of the simplest wastewater treatment technologies available is storing wastewater to precipitate all the dirt and hazardous residues, then in biofilter-filled shelters such as shells, water hyacinths, or inserts.

Five Forces Analysis

The description of the five forces in the business can be seen in Figure 1 below.



Figure 1. Five Forces Analysis

In Figure 1 above describes the conditions of the five forces in the industry. The buyer is one aspect in the industry that is very important because the company will get the proceeds from the buyer. With the highest value among other indicators, it indicates that buyers can easily find alternatives to other crops if the shrimp that has ever been purchased is unsatisfactory or unfavorable. So one of our business strategy is to accelerate the harvest process that can impact on the results of shrimp are more fresh, clear, and also clean. So that will make the buyer satisfied and will always looking for us when the harvest time is coming.

Among the five indicators above, which has the lowest value is the level of competition between competitors. Shrimp is a commodity of the world, which the level of competition is at the inter-state level. Therefore, what is happening in the field is togetherness fellow shrimp farmers, to increase productivity for shrimp production so Government target can be achieved. With such low levels of competition, shrimp business players will be able to focus more on quality improvement, rather than having to think about how to find a market to sell their crops. It is also that makes research on shrimp farming technology in this country continues to grow. In fact, Indonesia is currently the record holder of the largest tonnage per 1000m² that is 15 tons of shrimp using super-intensive cultivation system. That is a remarkable achievement needs to be proud of for the national shrimp industry.

The summary of the five forces above shows that the threat of competition among shrimp farmers is low. The bargaining power of buyers and suppliers is in the medium category, so it will not have a significant effect on this business, then the threat of substitution is also considered low, because the shrimp has a clear position in the minds of consumers and difficult to be replaced by other products. The threat of newcomers is in the medium category, where newcomers will not be too difficult to plunge in this industry, because the support from the government is good enough that would make it easier for prospective newcomers in accessing capital, the science of cultivation techniques, as well as information availability of land which are eligible. Nevertheless, the presence of newcomers do not harm this cultivation business, as long as communication can be well established so that there is a preventive action if one of the neighbors infected by a disease, and not harm other cultivators.

SWOT analysis

Next is to project the SWOT analysis to find out the internal and external conditions of this business after establishment. Identification of S (Strength), W (Weakness), O (Opportunity), and T (Threat) are as follows:

1. Strengths:
 - a. Cultivation technology is modern
 - b. Harvest is faster and more efficient
 - c. More quality crops
2. Weaknesses:
 - a. No product differentiation
 - b. Ponds are limited
 - c. Sales are still through intermediaries
3. Opportunities:
 - a. Local and export markets are still big.
 - b. Technology that continues to grow, facilitate the cultivators
 - c. Shrimp as a processed product have high demand
4. Threats:
 - a. The rise of other country's shrimp productivity
 - b. Price fluctuations of shrimp
 - c. High investment for new technology use, can slow down business growth

Market and Marketing Aspects

STP (Segmenting, Targetting, Positioning)

Segmenting

Our shrimp buyers are buyers from Rembang, Tuban and Lamongan area. Buyers from that region mostly big buyers which have export market and have a big cash capability, thereby reducing the risk of default, although the case is very rare in the shrimp industry. That regions are also the closest region of the cultivation location, so it will be easy to reach the location when harvest time is coming. However, because we also harvest the small shrimp, sometimes the price at individual buyer will be better and in terms of harvest costs will be less because the buyer only takes the quantity of about 30-50 kg which no need to pay for extra worker, because it can be done by the operator itself by capturing using net. Here is the market segmentation that will be displayed in Table 1.

Table 1. Segmentation of Rembang Shrimp Farming

Shrimp Size Buyer	Above 150 pcs/kg	Below 149 ekor/kg
	Individual	1
Restaurant	2	5
Cold Storage Company	3	6

Source: Processed Data (2017)

Targeting

For targeting, we will focus on the number 1, 6 that is in Table 1, for the shrimp with 150 pcs / kg will be sold to individual, because in general the quantity of that size is not too big that is about 3 - 5 Kwintal, so cold storage companies will usually provide a lower price considering transportation costs will be as great as if taking 4 tons, although sometimes if there is a shrimp rarity then cold storage will dare to put a high price to get the shrimp with such small size.

As for the harvest with size below 149 pcs / kg will be sold to cold storage that most will be exported. With a price of around Rp 57,000 / kg for that size, selling to cold storage will be

more profitable because large quantity can be sold immediately in one harvest, it does not happen if the buyer is an individual.

Positioning

The positioning of this cultivation business compared to traditional ponds in the Sarang area is "Quick harvest, clean shrimp and not pale". Positioning is based on our real superiority compared to traditional cultivators in the area. So that, we will be more easily remembered by the buyer.

Technical Aspects

Business Location

Our cultivation business is located in Sarang District of Rembang Regency. This location is chosen considering that the location is a land of our own, which will minimize some risks and make it easier for us to manage and utilize.. The location is also strategic in terms of feed and seed supply, since the warehouse of the feed and also hatchery used in the process of shrimp cultivation is located in the center of Rembang Regency. Likewise with easy access road because access is available for trucks that can go directly to the location of cultivation.

Business Layout

Design of the layout becomes quite important because it will consume big costs in the making, The ease of cultivation process will also determined by a well planned layout. For cultivating process, we will use geomembrane in accordance with the benefits of cost and durability

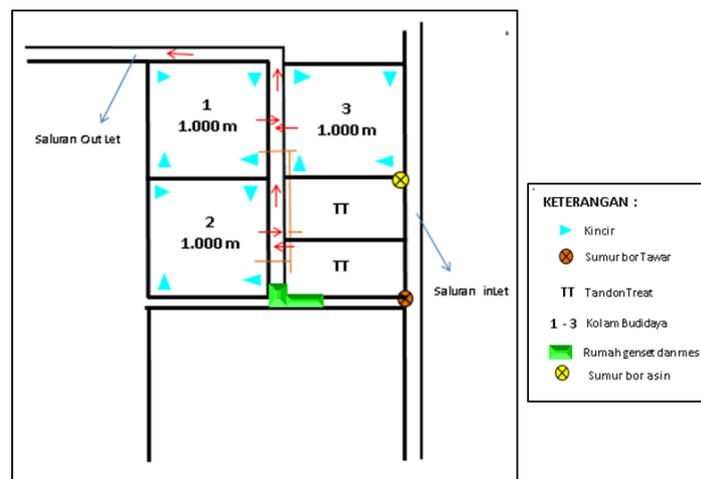


Figure 2. Kedai Ketan N Layout

Aspects of Management and Human Resources

At the beginning of this business the organizational structure used is a simple organizational structure, the top owner is only assisted by three operators to help for cultivation operations. While all other purposes such as financial problems will be handled by the owner themselves. Organizational structure like this has advantages that all activities can be monitored and also can be followed up immediately if there are things unappropriate. However, this organizational structure also has a deficiency in which the owner becomes the main focus of decision making, if the owner does not present, the other work beside cultivation process will be chaotic.

The salary given has been able to reach the Regional Minimum Wage of Rembang Regency which is Rp 1.408.000,-

Financial aspect

The financial aspect is the last aspect used to assess the business development worth doing or not. Financial aspect analysis is divided into three categories, namely normal conditions,

optimistic conditions and pessimistic conditions. Normal conditions are the most likely conditions to occur. Optimistic conditions are the best conditions that can be achieved, while pessimistic conditions are the worst conditions that may befall the company.

Table 2. Feasibility of Financial Aspects

Provision	Provision	PessimisticCondition	Normal Condition	Optimistic Condition
PP	PP < 4 Years	1 Year 4 Months	1 Year 3 Months	1 Year 3 Months
PI	PI > 1	3,17	3,88	5,06
NPV	NPV 5 Years > Rp 0	Rp 646.792.562	Rp 901.689.099	Rp 1.320.921.349
IRR		42,89%	50,91%	61,85%
		In pessimistic conditions the four provisions of eligibility are met	In normal condition the four provisions eligibility are met	In optimistic condition the four provisions eligibility are met

Source: Processed Data, 2017

CONCLUSSION

Environmental Aspects and Industrial Structure

Based on the results of industrial environmental analysis can be seen that the political situation in Indonesia is enough to support the national shrimp industry, Indonesia's economic conditions will also be projected to increase from year to year, while from the social point of view that the high demand of shrimp consumption in Indonesia indicates that shrimp has become a favourite product and already integrates with the culture in Indonesia, while the effect of technology on shrimp farming itself has a good impact, the more technological advance makes it easier for farmers to get satisfactory results. Based on PEST analysis, it can be seen that PEST factors are quite easy for the establishment of shrimp vannamei business in Rembang.

Based on the results of Five Forces Analysis, it can be seen that from the five strengths in the industry, the three biggest strengths are bargaining power of buyers, bargaining power of suppliers, and the threat of newcomers, while the threat of substitution products is not very influential and the competition between the existing competitors are very low.

Market and Marketing Aspects

Currently the level of shrimp consumption both locally and globally continues to increase, as well as increased production each year. This indicates that the market for shrimp is still not experiencing a saturation point even in the prediction will still continue to increase considering the shrimp is in great demand because it is a delicious and nutritious food.

Research on the establishment of shrimp farming business in Rembang uses STP analysis, it is generated that this business will target individual buyers and buyers of large parties such as cold storage companies. That two target markets are chosen to meet the needs of local markets and export shrimp markets. The positioning of this business is "Quick harvest, clean shrimp, not pale", the tagline is chosen because of the strength of this cultivation, when many shrimp suppliers from various cultivators, the tagline will be able to make the buyers remember our shrimp and will always wait for the next harvest from this farm.

Technical Aspects

Shrimp farming can not be separated from the technical aspects which for intensive cultivation system it is absolutely mandatory. The selected location is a safe location in terms of illness,

and also safe from the social aspect. Likewise, easy road access will facilitate all the needs both when preparation, cultivation process, and harvesting. Geomembrane technology will be able to help produce clean and bright shrimp, with a fast harvesting. Climate at the cultivation site is also quite stable where the average temperature is 23 ° C which is the optimal temperature of shrimp culture and maximum temperature of 33 ° C. Rainfall is also considered moderate with 4 to 5 wet months so it will facilitate when doing the distribution of seeds on time, because the drying process can be done optimally.

Aspects of Management and HR (Human Resources)

A simple organizational structure has been established which is accompanied by the terms and expertise of the operators. The salary given to 3 operators is in accordance with the Minimum Wage of Rembang Regency and there are also bonus to be provided in accordance with the performance of each operator to be assessed from the respective managed ponds. In addition, intensive mentoring will also be done by experienced technicians.

Financial aspect

The projected financial statements projected income statement and cash flow statement from 2017-2021. The method used is PP (Payback Period), PI (Profitability Index), NPV (Net Present Value) and IRR (Internal Rate of Return). All of these investment assessment criteria show positive results in both pessimistic, normal and optimistic conditions. Based on the results of feasibility analysis that has been made, it can be seen that the business feasibility criteria of the financial aspects have been met.

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