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Strategy for Development of Fishery Ship Docking Industry at PT Tegal Shipyard Utama, Tegal City

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Abstract
PT Tegal Shipyard Utama, Tegal City is one of the ship repair companies in Tegal City. This dock accepts ship repairs from wooden, fiberglass, and tugboat ship types. This as one of the supporting components in the economics activites that can be influenced by a feasibility of business on docking ships. The ship docking industry still needs to be developed to be able to fulfill the demand for shipbuilding or repairing and maintaining ships. In this study discussed the strategy of developing the shipping industry to strengthen national economics defense. This research will be carried out in Tegal City, Central Java Province. The data used in this research includes primary and secondary data. Primary data was obtained from respondents through interviews using questionnaires, while secondary data used statistical data from PT Tegal Shipyard Utama, and other supporting data. Research data was obtained using observation, interviews, and literature study methods, as well as documentation.
The results showed that value of NPV Rp. 345.254.030, IRR 30%, B/C ratio 1,17, and payback period value of 2 years 9 months. The QSPM matrix results are obtained from the SWOT matrix which produces alternative strategies.

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Introduction

Capture fishing activities cannot be separated from the existence of fishing vessels. Ships have an important role in every fishing operational activity in the waters. Fishing vessels are ships or boats used to catch fish, support fishing operations, fish cultivators, fish transportation, fish processing, training and research. One of the fishermen's activities at sea is capture fisheries, ships are the main means after fishing gear. Fishing boats in Indonesia are made of wood, boats made of wood really need maintenance, especially the hull below the waterline which is very easy to rot and leak.

A dock is a facility used for ship repairs and the construction of new ships. Usually ship docks are only used for ship maintenance, while shipyards are usually used for building new ships. However, in practice, docks and shipyards can be used as places for ship repairs and the construction of new ships. Ship docks consist of 4 types, namely swimming docks, graving docks, floating docks, slipway docks and synchrolift dry docks. Ship docking is an economic activity because it can generate income and profits. Capture fisheries production in 2022 at the Ocean Fisheries Port (PPS) was recorded at 5,783.95 tons (BPS Tegal Regency 2023) [1]. This situation is due to its location directly adjacent to the Indian Ocean, which is known to have abundant potential fish resources. This condition is used by the community to work as fishermen. Fishing activities require ships as a means of fishing. Based on data from the Tegal Regency Fisheries Service for 2023, the number of fishing vessels is around 5,586, consisting of 3,470 30 GT outboard motors and 331 boats without motors. Efforts that can be made to maintain the performance of the ship so that it is operationally viable are carrying out routine ship maintenance. Routine maintenance activities will certainly slow down the occurrence of damage to the ship, so it is necessary to carry out ship maintenance management.

Ship maintenance activities can be supported by adequate dock facilities. Ship docking is the process of moving a ship from the water area to the dock to carry out ship maintenance and repair activities.

PT Tegal Shipyard Utama Tegal city is one of the fishing ship dock companies in Tegal city. This dock is a dock that is very busy with ships wanting to carry out ship repairs. This dock accepts ship repairs from wooden, fiber glass and tughout ship types. The dock at PT Tegal Shipyard Utama has five towing platforms and two towing machines, the main 150 PK with a Mitsubishi engine, which are used alternately to serve five slipways. The ships that undergo repairs at this shipyard, on average, have a Gross Tonage (GT) between 20 GT and 500 GT.

Ship docking or ship maintenance facilities are an economic activity, because they can generate income or profits. Ship docking as an economic unit cannot be separated from general economic principles, namely acting economically in carrying out its activities. Therefore, it is necessary to carry out an analysis of business feasibility calculations, namely by calculating the Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (B/C), and Payback Period (PP) (Setiyono, 2018) from the ship docking business unit in Tegal City. Meanwhile, to find out the strategy for developing PT Tegal Shipyard Utama's fishing vessel docking business, a SWOT analysis and QSPM supporting analysis are needed.

The ship docking business in Tegal City is an example of an independent private business located in Tegal City. The existing ship docking company represents the potential of PT Tegal Shipyard Utama Tegal City, where this potential needs to be developed and maintained.

The ship repair business at PT Tegal Shipyard Utama, Tegal City, will continue to run well when there is consumer demand and producers who can meet consumer needs. The sustainability of the ship repair business is influenced by several factors, including the availability of facilities that support the ship repair business, the price of ship repair services at the company is relatively standard or not expensive so that it attracts ship owners to carry out ship repairs, as well as the regulations governing the ship repair business.

Generally, PT Tegal Shipyard Utama has difficulty to improve the company, so they need strategies to maintain and develop the company. This research was conducted to determine effective and efficient strategies for dockincompany in Tegal city, Central Java Province. This research aims to analyze the financial feasibility of the fishing vessel docking business and to formulate alternative strategies and strategic priorities that can be applied in developing the fishing vessel docking business at the PT Tegal Shipyard Utama.

Business Feasibility

Feasibility means a calculation of benefits and costs that is carried out in depth to determine whether the business or field that will be run will provide greater benefits than the costs incurred. Business is a business that is run with the main aim of making a profit. The profit referred to in a business venture is financial profit.

According to Kasmir and Jafkar a business feasibility study is an activity that studies in depth about a business or business that will be run, to determine whether or not the business will run. A feasibility study is an analysis of how successfully a project can be completed, taking into account factors that influence it such as economic, technological, legal and scheduling factors. Project managers use feasibility studies to determine the potential positive and negative outcomes of a project before investing a lot of time and money into it.

The main purpose of a feasibility study is to find out whether the business idea can be implemented. If the business idea is found to be viable, a business plan can be drawn up to obtain financial support. Another definition is also put forward in Reference. The purpose of a feasibility study is to analyze a business proposal to determine whether the project is feasible and whether it should be followed up. Determining whether a business is viable before it is founded prevents an investor from wasting money and time on a failed business venture.

Net Present Value

Net present value is a method used to calculate an interest rate that equates the present value of an investment with the present value of net cash receipts in the future. Net present value can be calculated using the following formula (Handayani *et al*., 2020) [4]:

$$NPV = \sum Bt - Ct\ (1+i)\ t\ n\ t=1$$

Remarks:

Bt = benefit at time-t

Ct = cost at time-t i = discount rate n = number of periods of time or economic life cycle The investment acceptance criteria are as follows:

Net Present Value > 0 = the investment can benefit and be feasible

Net Present Value < 0 = The investment is unable to benefit and is not feasible

Benefit Cost Ratio

The BCR is a comparison between the benefit value and the cost value, and the BCR can be calculated using the following formula (Lestari *et al.*, 2015; Handayanta *et al.*, 2016; Sudarmono and Sugeng, 2017) [12, 5, 15]:

$$BCR = \frac{\text{Total Benefit}}{\text{Total cost}}$$

$$BCR = \sum_{t=1}^{n} \frac{Bt(1+i)^t}{Ct(1+i)^t}$$

Remarks:

Bt = benefit at year-t

Ct = cost at year-t

i = discount rate

n = number of periods of time or economic life cycle

The investment acceptance criteria on the BCR is as follow:

BCR > 1 = the business is feasible (acceptable)

BCR < 1 = the business is not feasible (rejected)

BCR = 1 = capital return equals to cost incurred

Internal Rate of Return

The internal rate of return (IRR) is an interest rate for which the NPV is 0 or for which the BCR is 1. The internal rate return can be calculated using the following formula (Handayani *et al.*, 2020) [4]:

$$IRR = i' + \frac{NPV1}{NPV1 - NPV2}(i'' - i')$$

Remarks: i' = the highest discount rate
i" = the lowest discount rate
NPV1 = positive NPV
NPV2 = negative NPV

Payback Period

The payback period is a method used to calculate how long it takes to return the investment money from the annual cash inflow generated from the investment. The payback period can be calculated using the following formula (Handayani *et al.*, 2020) [4]:

$$Payback\ Period = \frac{I}{ab}$$

Remark:
I = the investment amount
Ab = net benefit generated from investment annually

The investment acceptance criteria based on PP as follows:
PP < PP minimum Feasible
PP > PP minimum Not Feassible

SWOT Analysis

SWOT analysis is the systematic identification of various factors to formulate a company strategy. This analysis is based on logic that can maximize strengths (Strengths) and opportunities (Opportunities), but simultaneously minimize weaknesses (Weaknesses) and threats (Threats). SWOT analysis (strength, weakness, opportunities, threat) was used to evaluate the opportunities and challenges of strategy development of docking company at PT Tegal Shipyard Utama Tegal city, explain that a systematic approach to supporting decision-making is to analyze the external and internal environment simultaneously using SWOT analysis. SWOT analysis is used to analyze internal and external factors to know the company's position based on the strengths, weaknesses, opportunities, and threats faced by the company. It is necessary to use a SWOT matrix to make it easier to formulate various strategies that need to be implemented describes the SWOT matrix as a table that groups the SWOT elements by problem type. SWOT analysis will identify existing strengths and opportunities as positive factors and existing weaknesses and threats as negative factors in a matrix. The SWOT concept according is as follows:

1. Strength is the superiority of resources, skills, and other abilities relative to competitors and market needs.
2. Weaknesses are limitations in resources, skills, and abilities that seriously hinder the effective performance of a company.
3. Opportunities are the main favorable situations in the company environment
4. Threats are the main situations or obstacles that are dangerous in the company environment.
5. Internal Variable Analysis (IFAS/Internal Strategic Analysis Summary), is a factor that can be controlled because it is outside the company. The function of IFAS is to analyze the company's competitors, which is based on strengths and weaknesses.
6. Analysis of external variables (External Strategic Factor Analysis Summary/ EFAS) are factors outside the reach of the company because they cannot be controlled and are outside the company, these factors include opportunities and threats.

QSPM Matrix (Quantitative Strategic Planning Matrix)

QSPM is a tool that allows strategists to evaluate various alternative strategies objectively based on previously identified important external and internal success factors. QSPM determines the relative attractiveness of various strategies built on key external and internal success factors. The relative attractiveness of each strategy within a set of alternatives is calculated by determining the cumulative impact of each important external and internal success factor. The advantage of using the QSPM method is that the series of strategies in the QSPM method can be observed sequentially and simultaneously and reduces the possibility that key factors will be missed but requires intuitive assessment and based assumptions.

Research Methods

Time and Location of Research

This research had carried out in Tegal city, Central Java Province, Indonesia on July 2024. The data used in this research includes primary and secondary data. Primary data was obtained from respondents through interviews using questionnaires, while secondary data used statistical data from the Central Statistics Agency, Maritime and Fisheries Service of Central Java, and other supporting data.

Data Collection Technique

Research data was obtained using the observation method. Interviews and literature studies, as well as documentation.

Data Processing Methods

Data processing methods consist of qualitative analysis and quantitative analysis. Quantitative research is a research procedure that produces descriptive data in the form of speech or writing and the behavior of the people being observed. Qualitative analysis is used to understand the company's environment to determine the strengths, weaknesses, opportunities, and threats facing the company. Meanwhile, quantitative research is a method that asks questions in the form of numbers and analysis using statistics. Quantitative analysis is used in SWOT matrix and QSPM matrix.

Result and Discussion

Financial Feasibility Analysis for PT Tegal Shipyard Utama Tegal City

Financial analysis in docking businesses consists of examining income and costs during the business period. This analysis was carried out to determine the figure of income, costs, ability to repay credit, and business feasibility conditions from a financial aspect. This analysis was carried out to determine the amount of investment costs and working capital from the business being run. Analysis of the financial feasibility of docking businesses in Tegal city was carried out based on the NPV, IRR, BC Ratio, and PP criteria. The assumptions used in the financial analysis used a discount rate (current bank interest) of 0.59%. Revenue from docking business was generated from the service of ships, which were processed into manure as a by product (Table 5). The production costs for beef cattle fattedocking businesses in the Tegal city, included depreciation costs for equipment; costs for labor, water, and electricity costs.

Tabel 1: The Average Economic Parameters of Docking Business in Tegal City, Central Java Province, Indonesia

Parameter	Amount (IDR/Year)
Production Cost	
Fix Cost	
Land Rent	
180.000.000	
Workers	960.000.000
Variable Cost	
Equipment Maintenance	54.000.000
Building Maintenance	12.000.000
Electric and water	37.000.000
Production Total Cost	1.243.000.000
Revenue	
1.463.715.600	
Income	220.715.600
Tax 10%	22.071.560
Net Income	
198.644.040	

Tabel 2: Feasibility Analysis of Docking Business in tegal City, central Java Provinc, Indonesia

Criteria	Amount
Benefit Cost Ratio	1,17
Payback Period	2,96
Net Present Value (NPV1 (10%))	IDR 345.254.030
Net Present Value (NPV2 (22%))	IDR 134.486.560
Internal Rate Return	30%

The BCR is a comparison between the benefit value and the cost value. The results of the BCR analysis of docking business in Tegal city, Central Java Province, Indonesia, obtained a value of 1.17, so it was proven that the BCR value was > 1. This value indicated that docking ships business in Java Province, Tegal city, was profitable and worth running. An increasing value of BCR means an increase in profit, and the business is more feasible (Khafsah *et al*., 2018) [6].

Based on the calculations, the NPV1 was 10%, which was positive, reaching an IDR of 345,254,030. It was estimated that there would be an increase in interest rates to 22%, and the NPV2 value would be IDR 134,486,560. The NPV was > 0, which indicated that the investment in the docking business was feasible and could benefit.

The IRR obtained based on calculations for ship docking business at Tegal city was 30%, which showed that it was feasible for business to reach the highest interest rate of 22% because of an IRR > 0. A business is considered worth running if the IRR value is > Social Discount Rate, whereas if the IRR value is <Social Discount Rate, then the business is not worth running.

The PP calculation resulted in a value of 2.96 years. This result indicated that the period of time for funds invested in the business could be returned within a period of approximately two years nine months. The period needed to return the invested funds is directly proportional; that is, the investment risk is lower if the returning period of investment is faster. The calculation results based on investment feasibility criteria show that it is feasible for businesses to run and become more feasible if the return period of investment decreases (Khafsah *et al*., 2018) [6].

Results of Internal Factor Matrix Analysis (IFAS and EFAS)

The IFAS Matrix is used to determine the strengths and weaknesses of ship docking within a company to determine the company's competitiveness. Strength and weakness factors will be given weights and ratings to calculate the score. The Interaction Factor Evaluation Matrix (IFE Matrix) is calculated by adding up each factor.

Alternative strategies are strategies that result from the collaboration of internal factors and external variables in the SWOT Matrix. The matrix will then identify the Strategy Advantage Profile (SAP) factors which include strengths and weaknesses and the Environmental Treaty and Opportunity Profile (ETOP) which includes opportunities and threats.

Tabel 3: Results of Alternative Strategies

SAP (*Strategy Advantage Profile*) ETOP (*Environment Threath & Opportunity Profile*)	**KEKUATAN (*STRENGTH*)** 1. Pier Facilities 2. Docking Equipment 3. Pier investment 4. Wide Working Area 5. Potential Market 6. Means 7. Welfare 8. Network 9. Experience	**KELEMAHAN (*WEAKNESS*)** 1. Pier Capacity 2. Warehouse Capacity 3. The goods storage area is over capacity 4. Communication Tools 5. Patrol ship 6. The accounting system is not yet optimal 7. Minimal Human Resources - Experts 8. Minimal employee training 9. Socialization and Promotion 10. Acquisition Feasibility Study None

PELUANG (*OPPORTUNITY*)	SO STRATEGY	WO STRATEGY
1. Economic Stability (Inflation and Economic Growth 2. Government support 3. Government Market Segment 4. Private Market Potential 5. Regional Autonomy 6. Availability of human resources 7. Community Support 8. Banking Support	1. Optimize orders from the Government (S1-5, O1-3,5,6). 2. Optimization of Private Companies (S1-5, O1,4) 3. Addition of Expert Staff (S8, O2). 4. Maintain good relationships with suppliers (S9, O3,4)	1. Increased Pier Capacity (W1, O1-5) 2. Increase in warehouse capacity (W2, O1-5) 3. Increased capacity of goods storage areas (W3, O8) 4. Addition of Communication Tools (W4, O8). 5. Addition of Patrol Equipment (W5, O8). 6. Procurement of a computerized accounting system (W6, O6) 7. Addition of Employees and Experts (W7,8, O6) 8. Implementation of Employee Training (W8, O6) 9. Increase Promotion (W9, O1.5) 10. Preparation of Feasibility Study for Acquisition (W10, O6)

Decision Making Stage

Based on the SWOT Matrix above, the resulting alternative strategies are as follows.

SO strategy, consisting of:

a) Increase cash inflow from government shipping company services.
b) Increase cash inflow from private shipping company services.
c) Additional experts from company.
d) Improving good, mutually beneficial relationships with business partners, both government companies, national, local and people's shipping businesses.

WO strategy, consisting of:

a) Increase dock capacity to meet the flow of passengers and loading and unloading of goods.
b) Increase warehouse capacity to accommodate goods from partners.
c) Increase the capacity of the storage area for goods being loaded and unloaded at the port.
d) Addition of communication tools used for patrolling so that ship flows can be detected accurately.
e) Addition of patrol equipment to monitor the work area for ship traffic.
f) Procurement and implementation of a computerized accounting system, good software and hardware.
g) Additional staff to fulfill port services and expert staff to handle very strategic matters.
h) Implementation of Employee Training
i) Increase socialization of the existence and promotions to gain potential market share.
j) Preparation of a feasibility study for the acquisition of similar companies

ST strategy, consisting of:

a) Maintain and improve the quality of service to partners as a form of service excellence in order to maintain market position.
b) Provide service differentiation that competitors do not have in order to maintain the market.
c) Procurement of modern technology in services and information technology

WT strategy, consisting of:

a) Carry out promotions to capture market opportunities so that sales value can be increased and product information can be accessed by partners.
b) Anticipate staff shortages through recruiting competent human resources in the port sector.
c) Minimize costs and efficiency to avoid losses.

Conclusion

Based on the results of this research, the recommended corporate strategy is a Growth Strategy. This strategy emphasizes expanding the company by building business unit centers or subsidiaries in other areas and can increasing product types or looking for work partners as a form of operational cooperation. The growth strategy requires the company to focus on increasing sales and profits.

The recommended strategies are a) increase market share, b) improve the quality and quantity of human resources, c) improve good relations with partners, d) increase the capacity of docks, warehouses and goods storage areas, e) increase communication and patrol equipment, f) procurement and implementation of a computerized accounting system, g) increasing socialization and promotion, h) preparing a feasibility study, i) maintaining and improving service quality, j) carrying out service differentiation, k) procurement of modern technology and information technology.

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