CURRENT ADVANCED RESEARCH ON SHARIA FINANCE AND ECONOMIC WORLDWIDE (CASHFLOW)

INVESTMENT ANALYSIS OF THE DEVELOPMENT OF THE KARANGAGUNG FISHING PORT IN TUBAN DISTRICT

Suresta Pradana[1]*, Wateno Oetomo[2], Koespiadi[3]

[1-3]Master of Civil Engineering, Faculty of Engineering, Universitas 17 Agustus 1945 Surabaya
E-mail: [1)] surestapradana@gmail.com, [2)] wateno@untag-sby.ac.id, [3)] koespiadi64@gmail.com

Abstract

Karangagung Fishing Port (PPI) in the coastal area of Tuban Regency, Palang District is known as the fisheries base in Tuban Regency, even most of the fish production from the Karangagung PPI fishing port has been marketed to all regions in East Java province. The sustainability of the development of an infrastructure project is very important to consider in the development of infrastructure in the maritime sector, especially the fisheries sector. This research will produce an investment analysis on the development of the Karangagung Fishing Port (PPI) infrastructure project which is expected to increase the productivity of the fisheries sector in the area. The investment analysis method used includes the calculation of Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost Ratio (BCR) with the analysis results of NPV value of 6,648,460,488.00, IRR 6.21% and BCR 1.0178 with an investment period of 25 years. From the results of the investment analysis that has been carried out, the NPV value is positive. then the IRR value or the rate of return on an investment with a value greater than the discount factor plan and the benefit value or BCR is more than 1 and the payback period in year 25 is the same as the investment period of 25 years. So, the feasibility of investment is still said to be feasible to use for handling the work of the Karangagaung Tuban Fishing Port Development.

Keywords: *Investment Analysis, Fisheries Infrastructure, Fishing Port*

1. INTRODUCTION

As the largest maritime country, Indonesia has tremendous fisheries and marine potential which is one of the main capital drivers of national economic growth. Based on Food and Agriculture Organization (FAO) data (FAO, n.d.), Indonesia currently has a sustainable potential of 6.4 million tons of fish resources per year with a total allowable catch of 5.8 million tons per year (80% of the sustainable potential). the wealth and potential of the maritime must be managed properly and efficiently. In this management, it is necessary to increase human resources, strengthen marine utilization management, spatial planning of maritime areas, diversify renewable energy sources at sea, modernize maritime technology, increase maritime research and development, improve and modernize the fisheries and shipping fleet, improve and modernize infrastructure, increase capacity and investment in the maritime industry sector, etc. (Muchammad Zaidun, 2019).

Karangagung Fishing Port (PPI) has a very important role for fishermen to support all their activities, so it needs attention. In general, to answer the needs of public infrastructure procurement, the Government can use various financing scheme options, including public budgets (APBN / APBD), BUMN capital budgets, private sector participation (Public Private Partnership) or more familiarly called PPP (Government Business Entity Cooperation) and foreign loans / debts (Muninggar 2007). In this case, an appropriate methodology must be used to select which financing scheme is most suitable for financing an infrastructure project(Sompa 2019).

In this study, an investment feasibility analysis of Karangagung Fishing Port Development in Tuban Regency was conducted. The investment feasibility analysis conducted was reviewed based on financial aspects. The purpose of this activity is to test whether or not the investment in the Development of Karangagung Fishing Port of Tuban Regency is feasible based on the laws and regulations. This aims to avoid unfavorable things such as errors in determining the location of buildings and technical planning of buildings, errors in estimating the target market, constraints in construction implementation, cost overruns, and errors in planning the management of Rusunawa.

2. LITERATURE REVIEW

2.1. Fishing Port

The Fishing Port (PPI) is a place for mooring activities for fishing boats / vessels to land the catch, or make preparations for going back to sea (loading boat logistics and boat crew). In addition, it is also the center of production activities, marketing, processing of products and fostering fisheries communities.Consumer or User Analysis.

According to Law Number: 9 of 1985 concerning fisheries article 18, regarding the function and role of fishing ports that can be described as follows:

a. Center for the development of fishing communities;
b. Anchorage of fishing vessels;
c. A place for landing fish catches;
d. A place to facilitate the activities of fishing vessels;
e. Center for handling and processing the quality of fishery products;
f. Center for marketing and distribution of fish catches;
g. Center for counseling and data collection;
h. Center for monitoring fishing and controlling the utilization of fish resources;

2.2. Project Cost Analysis

In general, Cost Analysis is calculated to find out how much it costs to build a project.

1. Development Investment Costs

Development Investment Costs (capital costs) which are often referred to as development costs are costs that include physical development, land purchases, and procurement of other items funded through the development budget. In this development, the costs incurred for the construction of the Port According to Kuiper (1971), the definition of capital costs is the sum of all expenses required from pre-study to completion. Capital costs are divided into two parts, namely:

2. Operational and Maintenance Costs

Maintenance or maintenance costs are a number of budget funds intended to keep work assets in optimal condition during use. Operational and maintenance costs are needed in order to meet the project life as planned in the design details (Fuller 2010). According to Poerbo (1989), the flat project is about 5% of the capital cost.

3. Revenue Projection

The projected revenue received by Karangagung Fishing Port (PPI) is sourced from retribution paid by fishermen and auction business actors. Financial projection is a

financial projection designed for the organization of a business venture that will be run or for the development of an existing business (Wulandari, 2016).

2.3. Investment Analysis

Investment activities are important activities that require large costs and have a long-term impact on business continuity. Therefore, a systematic and rational analysis is needed before the activity is realized. According to Kuswadi in Zainuri (2021), there are various methods of evaluating investment feasibility and one of them is the Discounted Cash Flow (DCF) method, using indicators:

a. Net Present Value (NPV).
b. Internal Rate of Return (lRR).
c. Benefit Cost Ratio (BCR).
d. Payback Period (PP).

2.4. Investment Analysis

Research conducted by Robertus Bellarminus Cengga (2019) with the title "Analysis of the Financial Feasibility Model for the Construction of the Fisheries Polytechnic Building Based on the APBN-BLU Financing Scheme" This study concluded that the use of the APBN-BLU financing scheme was declared feasible with Feasibility Analysis and Sensitivity Feasibility Analysis declared feasible if student tuition fees were still collected with a minimum value of Rp. 10,675,550.00 / person / semester.

Research conducted by Wardhana (2022) This study concluded that feasibility analysis based on NPV value shows positive cash flow so that the CNPB Tower 1 project is declared feasible. The results of the IRR analysis of the project were declared feasible, because the IRR interest rate was greater than the discount rate of 7.492%. The initial project has an IRR value of 12.37%. The proposed project has an IRR value of 17.77% where the IRR value of the proposed project is 5.44% greater than the initial project.

Research conducted by Fanani (2021) with the aim of analyzing the financial aspects of running a business / project that the costs used are feasible or not feasible. This financial aspect has several calculations with Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP), Benefit Cost Ratio (BCR).

3. RESEARCH METHODS

The research location is the Fishing Port (PPI) which is located in Karangagung village, Palang sub-district, Tuban Regency and the project owner is the Tuban Regency Government. The data used in this research are primary and secondary data. Primary data was obtained from observations at the research location and interviews with the Tuban Regency Government and the East Java Provincial Government. Secondary data used includes land asset data, master plan of Karangagung Tuban Fishing Port Development, data of Fishing Ports in Tuban Regency, and several regulations relevant to this research. After obtaining the data as mentioned above, an investment feasibility analysis is carried out based on financial aspects.

3.1. Data Analysis Technique

To answer each of the objectives of this research, the research stages and data analysis techniques in this research are described in the following subchapters:

1. Identification of Investment Costs and Annual Cash Flow of Karangagung PPI Development

This stage identifies the possible costs associated with the construction, operation and maintenance of the Karangagung PPI obtained from valid secondary data from related agencies and other technical guidelines.

The identification of Life Cycle Cost Analysis of Karangagung Fishing Port Development starting from investment costs (Capital Expenditure), operation and maintenance costs (Operation & Maintenance Cost) and revenue projections (Revenue) refers to secondary data from related agencies and related regulations.

a) Investment Costs of the Karangagung PPI Development

Development Investment Cost (capital cost) is projected into the development plan by using Future Value Analysis with the inflation value that occurs in the current year.

b) Operational and Maintenance Costs of PPI Karangagung

Operational and maintenance costs obtained from primary data collection are processed and projected into the development plan.

c) Revenue From Retribution of Fish Auction Site

Revenue is obtained from retribution on the sale of fish auction organizers, land rental, ice making and fuel income and port area entry fees in accordance with applicable regulations.

2. Investment Analysis of Karangagung PPI Infrastructure Financing Scheme

After the cost analysis stage, the next step is to analyze the cash flow of the Karangagung PPI development financing scheme, both through government and non-government financing schemes. Cash flow provides an overview of the amount of funds available to meet operational needs including investment costs for development and supporting infrastructure. After the cash flow analysis is carried out, an investment analysis consisting of NPV (Net Present Value), IRR (Internal Rate of Return), BCR (Benefit Cost Ratio), and Payback Period is carried out.

The National Institute of Standards and Technology (NIST) (1996: 35) defines Life Cycle Cost (LCC) as "the total discounted cost of owning, operating, maintaining, and disposing of a building or building system over a specified period of time." Life Cycle Cost Analysis (LCCA) is an economic evaluation technique that determines the total cost of owning and operating a facility over a specified period of time. LCC is the cost of a building over its planned life, including planning and construction costs, maintenance costs (routine maintenance and repair costs), and the cost of demolition and repair of unused materials.

Net Present Value (NPV) is a capital budgeting technique, which measures the profitability of a project investment plan using the time value of money factor. The net present value (NPV) criterion is based on the concept of discounting all cash inflows and outflows over the life of the project (investment) to present value, then calculating the net figure, the difference will be known using the same basis, namely current market prices. The project is declared feasible or not feasible if the NPV value is positive or greater than zero and vice versa.

According to Brigham (2014) IRR is a method of ranking investment proposals using the rate of return on an investment, which is calculated by finding a discount rate that equates the present value of future cash inflows to project costs. In short, the definition of internal rate of return or IRR is an indicator to determine the efficiency level of an investment. IRR is also known as a method to calculate the interest rate of an investment and equate it to the current value of the investment based on future net cash calculations. In general terms, IRR is a metric used in financial analysis to estimate the potential return on an investment. IRR is a discount rate that makes the Net Present Value (NPV) of all cash flows equal to zero in a discounted cash flow analysis. The calculation of IRR relies on the same formula as NPV(Sugiyono 2017).

The Benefit Cost Ratio (BCR) method in investment analysis, because according to Firdaus (2017), the Benefit Cost Ratio (BCR) or B-C Ratio is used for macro project activities that provide benefits to some or all of the community. According to Firdaus (2017), as in the calculation of IRR, the Net B/C will have a value if at least one of the Bt - Ct values is negative. Otherwise, the Net B/C is infinite. The decision: If Net B/C = 1, the NPV of the project = 0. If the result > 1, the NPV > 0. So the decision criteria: If B/C ≥ 1 then the investment activity is feasible and if B/C < then the investment activity is not feasible. The calculation analysis uses Formula 2.6 as below

The payback period method refers to the amount of time required to recover investment costs. Simply put, the payback period is the length of time for an investment to break even. When investing money, you want to get paid back. So that's why the payback period is so important. In Indonesian, the payback period is also called the payback period.

4. RESULTS AND DISCUSSION

4.1. Project Overview of the Karangagung Tuban Fishing Port (PPI) Development Project

The research object used in this thesis is the Fishing Port Development (PPI) project located in Karangagung village, Palang sub-district, Tuban district. The development of the fishing port (PPI) of Karangagung Tuban is required with the consideration of zone change considerations are:

1. The Fish Auction and Packing area should be close to the sea/ship zone to keep the fish fresh during distribution.
2. The office zone should be placed close to the fishery zone and support zone for ease of control.
3. The need for a tourist zone as the number of port visitors increases
4. The need for a separate Fish Auction and unloading dock between large vessels and small vessels to avoid clutter 4.

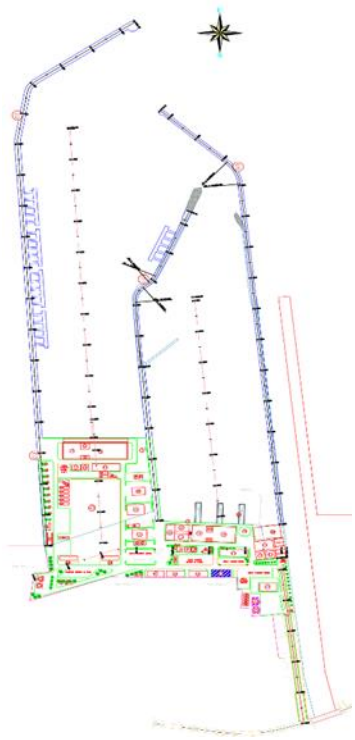

Figure 1. Master Plan of PPI Karangagung
Source: East Java Provincial Fisheries and Marine Service (2023)

4.2. Project Overview of the Karangagung Tuban Fishing Port (PPI) Development Project

1. Investment Cost of Karangagung PPI Development

In this study using future value calculations to determine the value of project cost requirements that will be projected to the investment value year of Development, namely in 2025. The investment value in 2020 is Rp. 330,334,882,912.00, then to get the future value in 2025 with a calculation with an inflation value of 2.56% obtained from Bank Indonesia statistics, the future value is obtained as follows:

Table 4.1. Investment Cost Analysis of PPI Karangagung

ITEM	2020 COST	FV/P,I,n	COST Year n
Phase 1 Construction Cost (2025)	222.151.774.876	1,128	250.587.202.060
Phase 2 Construction Cost (2032)	108.183.108.037	1,282	138.647.471.260
Total	**330.334.882.912**		

Source: Authors' analysis (2023)

2. Operating and Maintenance Costs

Operating and maintenance costs obtained from primary data collection are processed and projected into the Development plan. The results of the analysis can be seen in the following table:

Table 4.2. Operational and Maintenance Calculations

OPERATIONAL & MAINTENANCE COST					
NO	ITEM	ASSUMPTIONS	ASSET VALUE	Rp/ Year (2020)	Rp/ Year (2025)
1	Operations and Maintenance and Repair of **Operational Facilities Management.**	5% x total asset	2.000.000.000	1.000.000,00	1.128.000
2	**HR Labor** Costs			472.855.900,00	533.381.455
3	Operational Costs for Maintenance of **Basic Port Facilities** (entrance road, operational road, drainage, fence, office, TPI, etc.)	0,5% x total asset	64.595.038.970	322.975.194,85	364.316.020
4	Operational Costs for Maintenance of **Land and Sea Facilities**	0,05% x total asset	330.334.882.912	165.167.441,46	186.308.874
5	Operational Costs **Office Maintenance & Utilities** (stationery, electricity, telecommunications/internet, clean water, fuel for operational vehicles)	2% x total asset	10.613.618.190	212.272.363,81	239.443.226
6	Operational Costs of **Supporting Facilities Maintenance** (garage workshop, washing station, retail, mosque, public toilet, etc.)	2% x total asset	11.319.690.783	226.393.815,66	255.372.224
TOTAL				**1.400.664.716**	**1.579.949.799**

Source: Authors' analysis (2023)

3. Revenue Analysis

The amount of revenue is obtained from the Retribution for organizing a fish auction which is levied at 5% (five percent) of the sales transaction price as well as the profit from the sale of fuel and ES blocks and several building and land rental rates from the construction of a Fishing Port within the port area. The basis for taking this Regional Retribution Rate is taken based on Governor Regulation No.32 of 2021 concerning Adjustment of Regional Retribution Rates of East Java Province and obtained the annual revenue calculation value of Rp.19,214,722,000.00 (nineteen billion two hundred fourteen million seven hundred twenty two thousand rupiah)(Siyoto and Sodik 2015).

4.3. Investment Analysis

Before calculating the investment analysis, the cash flow projection must be calculated first. Cash Flow is Cash Income minus Cash expenditure. For the value of Cash Inflows, namely the Value of Revenue (Revenue). While Cash Out is the Value of RAB (Budget Plan Cost) needed in the Development of PPI Karangagung Tuban and Port Operating Costs.

Table 4.3. Cashflow Calculation

YEAR To	INVESTMENT	O & M	INCOME	Net Income
0	**250.587.202.060**			- 250.587.202.060
1		1.579.949.799	19.214.722.000	17.634.772.201
2		1.615.806.816	20.367.605.320	18.751.798.504
3		1.651.663.833	21.520.488.640	19.868.824.807
4		1.687.520.850	22.673.371.960	20.985.851.110
5		1.723.377.866	23.826.255.280	22.102.877.414
6	138.647.471.260	1.759.234.883	24.979.138.600	- 115.427.567.543
7		1.795.091.900	26.132.021.920	24.336.930.020
8		1.830.948.916	27.284.905.240	25.453.956.324
9		1.866.805.933	28.437.788.560	26.570.982.627
10		1.902.662.950	29.590.671.880	27.688.008.930
11		1.938.519.967	30.743.555.200	28.805.035.233
12		1.974.376.983	31.896.438.520	29.922.061.537
13		2.010.234.000	33.049.321.840	31.039.087.840
14		2.046.091.017	34.202.205.160	32.156.114.143
15		2.081.948.034	35.355.088.480	33.273.140.446
16		2.117.805.050	36.507.971.800	34.390.166.750
17		2.153.662.067	37.660.855.120	35.507.193.053
18		2.189.519.084	38.813.738.440	36.624.219.356
19		2.225.376.100	39.966.621.760	37.741.245.660
20		2.261.233.117	41.119.505.080	38.858.271.963
21		2.297.090.134	42.272.388.400	39.975.298.266
22		2.332.947.151	43.425.271.720	41.092.324.569
23		2.368.804.167	44.578.155.040	42.209.350.873
24		2.404.661.184	45.731.038.360	43.326.377.176
25		2.440.518.201	46.883.921.680	44.443.403.479

Source: Authors' analysis (2023)

1. NPV Method Analysis

In the NPV (Net Present Value) calculation, it will be known that the Investment Analysis will be positive (feasible) or negative (not feasible). The feasibility of investment with the Net Present Value method can be said to be successful by being measured, if the NPV is greater than zero (NPV ≥ 0).

Table 4.4. NPV Calculation of APBN/APBD Scheme

YEAR To	Net Income	Discount Factor	Discounted Cash Flow
0	- 250.587.202.060	**1**	- **250.587.202.060**

1	17.634.772.201	1,06	**16.636.577.548**
2	18.751.798.504	1,12	**16.689.033.912**
3	19.868.824.807	1,19	**16.682.248.439**
4	20.985.851.110	1,26	**16.622.759.682**
5	22.102.877.414	1,34	**16.516.555.791**
6	- 115.427.567.543	1,42	- **81.371.880.397**
7	24.336.930.020	1,50	**16.185.448.434**
8	25.453.956.324	1,59	**15.970.127.097**
9	26.570.982.627	1,69	**15.727.323.791**
10	27.688.008.930	1,79	**15.460.839.570**
11	28.805.035.233	1,90	**15.174.133.229**
12	29.922.061.537	2,01	**14.870.347.879**
13	31.039.087.840	2,13	**14.552.335.594**
14	32.156.114.143	2,26	**14.222.680.296**
15	33.273.140.446	2,40	**13.883.718.969**
16	34.390.166.750	2,54	**13.537.561.337**
17	35.507.193.053	2,69	**13.186.108.104**
18	36.624.219.356	2,85	**12.831.067.856**
19	37.741.245.660	3,03	**12.473.972.723**
20	38.858.271.963	3,21	**12.116.192.877**
21	39.975.298.266	3,40	**11.758.949.960**
22	41.092.324.569	3,60	**11.403.329.512**
23	42.209.350.873	3,82	**11.050.292.457**
24	43.326.377.176	4,05	**10.700.685.739**
25	44.443.403.479	4,29	**10.355.252.146**
		NPV	**6.648.460.488**

Source: Authors' analysis (2023)

From the table above, a positive NPV value is obtained, indicating that the project is expected to generate a favorable net financial value. In other words, the project can be considered financially viable, as the present value of cash inflows exceeds the present value of cash outflows.

2. IRR (Internal Rate of Return) Method Analysis

To get the Negative NPV calculation is done by Trial and error method with the assumption of i = 7%, the NPV value = - 25,007,303,197.00. From the calculation of the IRR value, a value of 6.21% is obtained. It can be seen that the IRR value is greater than the interest rate value used, so this investment is feasible.

3. Calculation of BCR (Benefit Cost Ratio)

Benefit cost ratio is the ratio between the present value of benefits divided by the present value of costs. The B/C-R results of a project are said to be economically feasible

if the B/C-R value is greater than one. The following table shows the results of the BCR analysis for conventional contracts with an interest rate of 6%.

Table 4.5. Calculation of PV benefit and PV Cost

YEAR To	PV Invest	PV O&M	PV Revenue
0	250.587.202.060	-	-
1	-	1.490.518.679	18.127.096.226
2	-	1.438.062.314	18.127.096.226
3	-	1.386.768.803	18.069.017.242
4	-	1.336.674.572	17.959.434.254
5	-	1.287.808.196	17.804.363.987
6	97.740.996.270	1.240.191.174	17.609.307.047
7	-	1.193.838.638	17.379.287.071
8	-	1.148.760.001	17.118.887.098
9	-	1.104.959.564	16.832.283.355
10	-	1.062.437.053	16.523.276.623
11	-	1.021.188.136	16.195.321.366
12	-	981.204.873	15.851.552.752
13	-	942.476.143	15.494.811.737
14	-	904.988.030	15.127.668.326
15	-	868.724.173	14.752.443.142
16	-	833.666.088	14.371.227.425
17	-	799.793.461	13.985.901.566
18	-	767.084.417	13.598.152.273
19	-	735.515.754	13.209.488.477
20	-	705.063.175	12.821.256.051
21	-	675.701.473	12.434.651.434
22	-	647.404.725	12.050.734.237
23	-	620.146.443	11.670.438.900
24	-	593.899.728	11.294.585.468
25	-	568.637.398	10.923.889.544
	348.328.198.330	**24.355.513.011**	**379.332.171.828**

Source: Authors' analysis (2023)

The BCR (Benefit-Cost Ratio) value of 1.0178 was obtained. In this case the BCR which is more than 1 is a positive indicator indicating that the expected benefits of a project or investment exceed the costs incurred to run the project.

4. Payback Period Calculation

This method is generally used to evaluate the level of risk of an investment, although it has limitations in not taking into account the time value of future cash flows and not considering cash flows after the payback period is complete. For PP calculations can be seen in the table below:

Table 4.6. Cumulative PV Calculation of APBN/APBD Scheme

YEAR To	Discounted Cash Flow	PV CUMULATIVE
0	**- 250.587.202.060**	- 250.587.202.060
1	**16.636.577.548**	- 233.950.624.512
2	**16.689.033.912**	- 217.261.590.600
3	**16.682.248.439**	- 200.579.342.160
4	**16.622.759.682**	- 183.956.582.478
5	**16.516.555.791**	- 167.440.026.687
6	**- 81.371.880.397**	- 248.811.907.084
7	**16.185.448.434**	- 232.626.458.650
8	**15.970.127.097**	- 216.656.331.553
9	**15.727.323.791**	- 200.929.007.762
10	**15.460.839.570**	- 185.468.168.192
11	**15.174.133.229**	- 170.294.034.963
12	**14.870.347.879**	- 155.423.687.084
13	**14.552.335.594**	- 140.871.351.490
14	**14.222.680.296**	- 126.648.671.193
15	**13.883.718.969**	- 112.764.952.224
16	**13.537.561.337**	- 99.227.390.887
17	**13.186.108.104**	- 86.041.282.783
18	**12.831.067.856**	- 73.210.214.926
19	**12.473.972.723**	- 60.736.242.203
20	**12.116.192.877**	- 48.620.049.327
21	**11.758.949.960**	- 36.861.099.366
22	**11.403.329.512**	- 25.457.769.854
23	**11.050.292.457**	- 14.407.477.397
24	**10.700.685.739**	- 3.706.791.658
25	**10.355.252.146**	6.648.460.488

Source: Authors' analysis (2023)

From the table above, it can be concluded that the payback period for the APBN / APBD scheme is in the last year, namely year 25, it can still be said to be feasible from the payback period analysis.

5. CONCLUSION

Analysis The calculation of needs has been carried out for the development work of the Fishing Port (PPI) Karangagung Tuban using the Life Cycle Cost, Discount Factor, and Future Value methods and the results of the investment value in 2025 are Rp. 372,617,747,925.00, the value of Operations and Maintenance Rp. 1,579,949,799.00 and the projected value of income is Rp. 19,214,722,000.00.

Investment Analysis on the development work of the Fishing Port (PPI) Karangagung Tuban using the Net Present Value (NPV) method obtained a value of 6,648,460,488.00, IRR 6.21% and BCR 1.0178 on the APBN / APBD scheme with an investment period of 25 years. From the results of the investment analysis that has been carried out, the NPV value is positive. then the IRR value or the rate of return on an investment with a value greater than the discount factor plan and the benefit value or BCR is more than 1 and the payback period in year 25 which is almost close to the investment period of 25 years. So, the feasibility of investment is still said to be feasible to use for handling the work of the Karangagaung Tuban Fishing Port Development(Putri and Putri 2020).

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