ANALYSIS OF INVESTMENT SENDITIVITY IN TAMAN MELATI DINOYO APARTMENT, MALANG CITY

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Abstract

This research investigates the investment potential of Taman Melati Dinoyo Apartment in Malang City, focusing on economic and property market analysis. This research identifies the main factors affecting apartment investment, including property prices, construction costs, occupancy rates, and interest rates. Through a comprehensive literature review and primary data collection through interviews, the research provides insights for property developers, highlighting potential risks and effective mitigation strategies. The proposed investment structure involves a 30% equity and 70% borrowing ratio. Analysis methods such as NPV, IRR, BCR, and Payback Period are used for financial assessment. The Taman Melati Dinoyo Apartment Project in Malang City is financially feasible, with a NJOP value of Rp. 418,462,580,000. The NPV value is positive at Rp. 55,585,691,096, although the IRR is slightly below MARR at -8.99%. The BCR is 0.7997, indicating the project is less than 1, and the payback period is reached in the second year at IDR 186,959,656. Sensitivity analysis showed feasibility even with an increase in investment by 38% and a decrease in revenue by 20%.

Keywords: Investment, Taman Melati Dinoyo Malang Apartment, financial aspects, NPV, IRR, BCR, Payback Period, Sensitivity Analysis.

1. INTRODUCTION

Malang City is the second largest city in East Java after Surabaya City, together with Malang Regency and Batu City, Malang City is part of a regional unit known as Malang Raya. Malang City has an area of 11,426 Km2 and is located at an altitude between 440 - 667 meters above sea level. Based on data from BPS Malang City, the population in 2020 was 843,810 people, in 2021 it was 844,933 and in 2022 it was 846,126 people. The population is spread across five sub-districts, namely: Koljen District, Blimbing District, Kedungkandang District, Sukun District, Lowokwaru District (Peraturan Daerah, 2022).

Malang City as a tourism city is evidenced by various tourist destinations that can be visited such as: nature tourism, vehicle tourism, prehistoric tourism, religious tourism, culinary tourism both in the Malang City area and the Greater Malang regional area (Peraturan Menteri, 2017). The mountainous area whose area is fertile, the climate and weather are cool and has a beautiful natural panorama makes tourists interested in visiting this city, it can be seen from BPS Malang City data, the number of domestic tourists visiting Malang City in 2020 was 662,570, in 2021 it was 771,670 while in 2022 there were 2,749,783 tourists and the number of tourist visits to Malang City until July 2023 through data on the occupancy rate of star classification hotel rooms reached 61.71 percent (Peraturan Kemenaker, 2023).

Malang City is known as a city of education because it is one of the education centers in East Java Province. The existence of public or private institutions based on

education with excellent quality and leading in this city, Malang City has as many as 3 State Universities, 4 Private Institutes, 29 Colleges, 8 Academies, and 5 Polytechnics. According to data from BPS East Java last update July 20, 2023, in 2020 there were 251,902 students, in 2021 the number of students in Malang City was 253,158 students, in 2022 there were 255,481 students. The increase in the number of students in this city, indirectly causes the growth in the need for rental housing facilities, such as boarding houses, rentals, dormitories and apartments to increase (Peraturan Daerah Kota Malang, 2011).

Rapid economic growth, urbanization, and industrial development have become the main drivers of the development of the property sector in various cities in Indonesia (Abdul-Rahman & Alidrisyi, 1994). Malang City, as one of the centers of development in East Java, is no exception in attracting the attention of investors in the property sector. Malang City with significant economic growth and industrial development, has experienced an increase in demand for comfortable and affordable housing. Taman Melati Dinoyo Apartment in Malang City emerged as an attractive alternative in meeting urban housing needs. The presence of modern facilities, good accessibility, and the potential for increased property values are important factors that encourage investor interest in investing in apartments.

Taman Melati Dinoyo Apartment in Malang City, which is located on Jl. M.T. Haryono no 19 Dinoyo, Lowokwaru, Malang City with a land area of 4,841 m2, a building area of 25,423 m2, has a total of 20 floors with a building height of 64.20 meters. The apartment has the concept of Give You Smart and Natural Living, making the apartment a building that blends with nature, an environment that supports a modern lifestyle and high-speed internet technology. Taman Melati Dinoyo Apartment has 728 units with 3 different types, namely: studio type, type 2 BR, special type.

The amount of development in Malang City causes the narrower land that can be built and causes land prices to become more expensive so that policies and thoughts emerge to utilize limited land as much as possible, the concept of vertical development becomes a reference for investors for office trade and residential flats or better known as apartments. The concept of vertical residential function development can optimize land use even though it is not the best solution because it causes an increase in construction value of 1.8% of the construction value of a single house in general (according to REI Centre). The added value of apartments is in great demand by the middle and upper classes and makes the level of sales of apartment units high. Indonesia's current property conditions make it easier to realize these housing needs as a form of property business which is then reinforced by low bank interest from the previous year so that many capital owners choose to switch from saving systems in banks that hope to benefit from bank interest to investing in property because it is considered more profitable (Kerzner, 2017).

One of the profitable property investments because the price continues to increase every year is investment in apartment projects. The existence and development of apartments for the middle to upper class community which is one of the many forms of housing is influenced by business factors and not merely because of the need for residential space. In addition, large investment costs and the tendency of apartment occupancy to continue to decline make investment analysis very necessary. Investments made must be calculated carefully and precisely using complex calculations. This is done to help the task of owners and investors in making decisions regarding the construction of new projects (Soeharto, 1999). Investments are faced with an uncertain future, so

before carrying out an investment it is necessary to analyze the feasibility of the investment to determine whether the investment can be carried out with profit or otherwise.

This study aims to determine the feasibility of project investment by reviewing from a financial perspective (Kimmons & Loweree, 2017). The financial aspect is carried out to determine the investment parameters of the price of a land and building, calculate expenses, revenue which can then be made cash flow during the investment period, calculate the return on capital and investment appraisal from the technical analysis method, then sensitivity analysis is carried out on each investment, namely: investment cost, annual cost, investment life and interest rates.

Based on the description of the background above, the purpose of this study is to determine the value of the building to be built, determine the feasibility of investing in Taman Melati Dinoyo Apartment in Malang City using the Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR), and Payback Period (PP) methods. As well as knowing the level of investment sensitivity of the Taman Melati Dinoyo Apartment in Malang City (Peraturan Walikota Malang, 2012).

2. RESEARCH METHODS

The subjects in this study are individuals who play a role in the Taman Melati Apartment construction project, including the owner or employer, namely PT Adhi Karya Propety, the service provider consisting of contractors represented by project managers and supervisory consultants (Assaf & Al-Hejji, 2006). The research location is in Malang City - East Java, precisely on MT. Haryono No. 160 /4. This location is very strategic because it is between several well-known campuses such as Brawijaya University, Uin Malik Ibrahim, POLINEMA, UMM. The research instruments used in this research are interview guidelines and observation sheets or observation guides as data collection instruments.

In this research, the data collection method used is using interview method, observation. The secondary data required for this research are as follows:

1. Drawing data from PT Adhi Karya
2. NJOP data of Lowokwaru sub-district
3. Electricity tariff data
4. PDAM clean water usage tariff data
5. Malang City BPS data (land area of each sub-district, total population, number of students)
6. Bank interest rate

The financial aspect is carried out by calculating the investment feasibility parameters, namely:

1. NPV
2. IRR
3. BCR
4. Payback Period
5. Sensitivity Analysis.

3. RESULTS AND DISCUSSION

3.1. Cash Flow

After calculating the cash inflows and outflows at Taman Melati Dinoyo apartment in Malang City, the cash flow is then calculated. The calculation of cash flow uses the amount of MARR based on the rate of return on own capital and return on borrowed capital. The cost per year is calculated with a Discount factor (DF) using the formula :

$$DF = \frac{1}{(1+i)^n}$$

Where:
i = MARR investment = desired rate of return
n = years when costs are incurred (year 1 to year 20)
example of first year DF calculation:

$$DF = \frac{1}{(1+0,0779)^1}$$
$$= 0,8884$$

The criteria used to assess the feasibility of investment in Taman Melati Dinoyo apartment in Malang City using the NPV IRR, BCR, PP method, then analyzed for sensitivity (Peraturan Daerah, 2015). The construction of Taman Melati Dinoyo apartment in Malang City requires an investment cost of Rp. 456,995,381,212, - Assuming an investment period of 10 years. From the calculation of cash flow, the value of the Net Present Value (NPV) feasibility analysis is IDR 55,585,691,096. So the NPV of Taman Melati apartment in Malang City when using the assumptions used in this study is financially feasible because the NPV value> 0.

3.2. BCR

The analysis results in Table 1 show that BCR is not feasible, because the BCR value is 0.79 < 1.

Table 1. BCR

Year	NPV Income (Revenue)	NPV Expenditure (Operational)	BCR
0	-	Rp 456.995.381.212	0
1	Rp 8.765.198.671,70	Rp 34.398.495.263,12	3,92444
2	Rp 33.261.312.467,53	Rp 33.074.352.811,00	0,994379
3	Rp 42.445.076.376,88	Rp 31.812.110.830,59	0,749489
4	Rp 57.364.036.126,28	Rp 30.642.360.951,18	0,534174
5	Rp 66.214.634.437,27	Rp 29.532.262.994,08	0,446008
6	Rp 67.135.560.489,92	Rp 28.472.710.639,07	0,424108
7	Rp 64.221.325.875,74	Rp 27.505.376.097,68	0,42829
8	Rp 61.694.987.576,34	Rp 26.620.065.836,77	0,431479
9	Rp 59.727.195.883,54	Rp 25.823.331.049,10	0,432355
10	Rp 58.014.481.038,24	Rp 25.105.603.007,00	0,432747
			8,797468
NOT APPROPRIATE		BCR	< 1

Source: Author's Process, 2023

3.3. Payback Period

Table 2. Payback Period

Year	NPV Income (Revenue)		NPV Expenditure (Operational)		Difference	
0		-	Rp	456.995.381.212	Rp	456.995.381.212
1	Rp	8.765.198.671,70	Rp	34.398.495.263,12	Rp	25.633.296.591,42
2	Rp	33.261.312.467,53	Rp	33.074.352.811,00	Rp	186.959.656,53
3	Rp	42.445.076.376,88	Rp	31.812.110.830,59	Rp	10.632.965.546,29
4	Rp	57.364.036.126,28	Rp	30.642.360.951,18	Rp	26.721.675.175,10
5	Rp	66.214.634.437,27	Rp	29.532.262.994,08	Rp	36.682.371.443,20
6	Rp	67.135.560.489,92	Rp	28.472.710.639,07	Rp	38.662.849.850,85
7	Rp	64.221.325.875,74	Rp	27.505.376.097,68	Rp	36.715.949.778,05
8	Rp	61.694.987.576,34	Rp	26.620.065.836,77	Rp	35.074.921.739,57
9	Rp	59.727.195.883,54	Rp	25.823.331.049,10	Rp	33.903.864.834,44
10	Rp	58.014.481.038,24	Rp	25.105.603.007,00	Rp	32.908.878.031,24

Source: Author's Process, 2023

3.4. Internal Rate of Return (IRR)

Feasibility analysis with IRR is carried out using trial and error, looking for the value of i with positive and negative NPV. Try to change the value of i to get the value of NPV (+) and NPV (-) then use interpolation.

Table 3. Relationship between i and NPV

i	NPV	
7,79%	Rp	(48.409.594.000)
5%	Rp	(28.137.540.824)
4%	Rp	(6.256.440.156)
3%	Rp	36.884.084.246

Source: Author's Process, 2023

The IRR value is less than the MARR value of 7.79%, so this project is not acceptable or not feasible when using the assumptions used in this study. Cash flow IRR and NPV relationship can be seen in the Appendix.

3.5. Analisis Sensitivitas

Sensitivity analysis is used to determine how much influence a decision has on changes that occur. The results of the calculation of the NPV value and the financial analysis of Taman Melati Dinoyo Malang apartment are feasible, so a sensitivity analysis is carried out by changing the parameters to see the extent to which the project can be said to be feasible or acceptable. (Soeharto, 1999)In this final project, the parameters changed are the selling rate of residential units, the rental rate of residential units, and the increase in investment costs. Then the relationship is seen to the NPV of the cash flow of Taman Melati Dinoyo apartment in Malang City. Some identification of the causes of the project are not feasible including:

1. Debt payment burden
2. High investment costs
3. Low rental price
4. Operating expenses

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5. Potential terminal value changed

The relationship between changes in the selling rate of residential units and NPV can be seen in the following table:

Table 4. Relationship Between Residential Selling Cost And NPV

Residential Unit Selling Rates	Residential Unit Selling Rates (Rp)			NPV (Rp)
	Studio A	2BR	Specialised	
20%	486.000.000.00	506.400.000.00	996.000.000.00	8.249.694.687
10%	445.500.000.00	464.200.000.00	913.000.000.00	(20.079.949.656)
Currently.	405.000.000.00	422.000.000.00	830.000.000.00	(48.409.594.000)
-10%	364.500.000.00	379.800.000.00	747.000.000.00	(76.739.238.343)
- 20%	324.000.000.00	337.600.000.00	664.000.000.00	(105.068.882.686)

Source: Author's Process, 2023

From the graph of the relationship between the selling rate of residential units and NPV, it can be seen that the higher the selling rate of residential units, the higher the NPV value. The investment acceptance limit for the construction of Taman Melati Dinoyo apartment in Malang City is around 18% of the current selling rate of residential units. The cash flow relationship between the increase in the selling rate of residential units and NPV is in the table below.

Table 5. Relationship Between Residential Rental Rates And NPV

Residential Unit Selling Rates	Residential Unit Selling Rates (Rp)			NPV (Rp)
	Studio A	2BR	Specialised	
40%	3.500.000	4.060.000	7.700.000	3.855.928.042
20%	3.000.000	3.480.000	6.600.000	(22.276.832.979)
Currently.	2.500.000	2.900.000	5.500.000	(48.409.594.000)
- 35%	2.000.000	2.320.000	4.400.000	(74.542.355.020)
-20%	1.625.000	1.885.000	3.575.000	(94.141.925.786)

Source: Author's Process, 2023

From the graph of the relationship between the rental rate of residential units and NPV, it can be seen that the higher the rental rate per unit, the higher the NPV. The investment acceptance limit for the construction of Taman Melati Dinoyo apartment in Malang City is around 38% of the current rental rate for residential units. The relationship between the effect of investment costs on NPV can be seen in the following table:

Table 6. Relationship Between Investment Costs And NPV

Change in Investment Cost	Investment Costs (Rp)	NPV (Rp)
Raised 20%	525.440.496.869	(130.897.250.029)
Raised 10%	481.653.788.797	(89.653.422.014)
Currently	437.867.080.724	(48.409.594.000)
Retrieved 10%	394.080.372.652	(7.165.765.985)
Retrieved 20%	350.293.664.580	34.078.062.030

Source: Author's Process, 2023

From the graph of the effect of investment costs on NPV, it can be seen that the lower the investment costs, the higher the NPV, the limit of investment income for the construction of Taman Melati Dinoyo apartments is around 7.79% of the investment costs set at this time. Cash flow relationship of the effect of investment costs on NPV.

4. CONCLUSIONS

From the research findings presented in this thesis, several key conclusions can be drawn. Firstly, the Taman Melati Dinoyo Apartment building in Malang City holds a significant NJOP value, amounting to Rp. 418,462,580,000. Financial feasibility analysis further indicates the viability of the project, supported by a positive Net Present Value (NPV) of Rp. 55,585,691,096, despite an Internal Rate of Return (IRR) of -8.99% falling below the Minimum Acceptable Rate of Return (MARR) at 7.79%. Additionally, the Benefit-Cost Ratio (BCR) is below 1, standing at 0.7997, and the Payback Period is 0.992, equivalent to Rp. 186,959,656.53. Notably, sensitivity analysis underscores the project's feasibility, even with a 38% increase in investment and a 20% decrease in revenue. As for recommendations, future research is encouraged to explore sensitivity analysis on other variables influencing cash flow and to incorporate additional feasibility analyses beyond financial considerations.

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