



Journal of Development and Integrated Engineering

Journal homepage:
<https://ejournal.upi.edu/index.php/jodie>



Financial Feasibility Study for a Development Project: A Case Study of Mamuju Town Square

Andi Taupan

Ikatan Arsitek Indonesia Sulawesi Barat, Indonesia

*Correspondence: E-mail: mars23anditaupan@upi.edu

ABSTRACT

Many facilities are needed to support the development and growth of the Mamuju area, such as hotels, apartments, malls, and so on. Besides that, Mamuju has promising investment value as a city that supports the growth of tourism, business, and trade. One of them is Mamuju Town Square, which can strengthen the economy of West Sulawesi, especially Mamuju. This research aims to analyze the feasibility of the Mamuju Town Square project. By using financial feasibility analysis, it was found that the NPV was 342,265,137,075 (feasible) and was profitable because the NPV was >0 . The IRR value is $49\% > 12\%$, so it is said to be feasible. The BCR value is $2.3662446577 > 1$ (feasible). PP value is 2 years 3 months (feasible) because $PP < \text{plan age}$. The results of the sensitivity analysis of the factors reviewed in the Mamuju Town Square project regarding a decrease in income showed that conditions were feasible and profitable if the reduction in income decreased by up to 60%. In comparison, a decrease in revenue with an increase of 70% was said to be not feasible and quite sensitive.

ARTICLE INFO

Article History:

Submitted/Received 5 Jan 2025

First Revised 24 March 2025

Accepted 4 May 2025

First Available 1 June 2025

Publication 1 June 2025

Keywords:

financial feasibility,
development project,
Mamuju Town Square

1. INTRODUCTION

As the capital of West Sulawesi province, Mamuju is a destination for urbanization, necessitating improvements in the quality of its regional spatial planning (Marsawal, 2021). Numerous facilities are required to support the development and growth of the Mamuju region, including hotels, apartments, shopping malls, and more. Furthermore, Mamuju holds promising investment potential as a city poised to drive growth in tourism, business, and trade. It is a heterogeneous area—home to both the indigenous Mamuju people and migrants—that possesses significant economic and tourism appeal (Raodah, 2018). The Mamuju region is currently undergoing growth and development, creating ample opportunities for investment in the construction of hotels and shopping malls. One such project, Mamuju Town Square, has the potential to strengthen the economy of West Sulawesi, particularly in Mamuju. This benefits the construction services industry by increasing the revenue of construction firms. A key positive outcome is the creation of opportunities for investors to make capital investments (Maulana & Adriana, 2022).

An investment is a decision that entails risk, as it requires committing capital today with the aim of securing various benefits in the future. These benefits may take the form of financial gains, non-financial advantages, or a combination of both. Since such benefits are only realized in the future—a timeframe inherently fraught with risk—an investment feasibility study is essential. This process helps to eliminate or at least mitigate risks, while ensuring that the desired level of return can be achieved (Leonandri, 2023).

All components of the development must be analyzed and planned, especially since the project requires bank financing and involves a substantial capital investment. It would be highly unfortunate if losses were to occur due to inaccurate analysis during the planning phase (Afanin, 2021). Therefore, a feasibility study is essential to prevent such losses. Given that this study entails highly complex calculations, it must be conducted with precision and care. A feasibility study is a process used to determine whether a venture is viable by conducting an in-depth examination of the proposed business or project (Kasmir & Jakfar, 2020). This will assist estimators in analyzing various potential issues that may arise (Syamsuddin, 2020).

A feasibility study is conducted to avoid excessive capital investment in ventures that may prove unprofitable, especially when weighed against the significant investment risks; the cost required to carry out such a study is relatively small (Y. Pramana & Wiguna, 2017). According to Novita Anggun et al., a feasibility study for a development project is conducted to ensure that the project is organized in accordance with applicable regulations. Furthermore, a financial feasibility assessment is carried out to avoid significant capital investment in projects that are not profitable (Anggun, 2024).

This study aims to determine the investment costs and total revenue of Mamuju Town Square, as well as to analyze the financial feasibility of the Mamuju Town Square project using the NPV, BCR, PP, and IRR methods. A sensitivity analysis is also conducted by examining the impact of a decline in revenue on Mamuju Town Square.

Based on the background information provided above, this study offers several key benefits, namely:

1. Assists in identifying and selecting public investments that can enhance the well-being of the nation and its beneficiaries.
2. Helps optimize the allocation of resources.
3. Assists in developing contingency plans.
4. Helps improve project implementation.

5. Assists in achieving project objectives quickly and efficiently.

2. RESEARCH METHOD

Research conducted in a comprehensive and in-depth manner, using both qualitative and quantitative methods (Huberman, 1992). This study is a case study focusing on the development of an architectural project: the Mamuju Town Square. The research process involved data collection, organization or classification, analysis, interpretation, and the drawing of conclusions. Cost and revenue analyses were conducted as financial components using Microsoft Excel (I. M. W. Pramana et al., 2023).

Project feasibility analysis is examined from a financial perspective using the following criteria-based methods (Soeharto I, 1995):

1. Net Present Value (NPV)

The NPV method is used by discounting all cash outflows over the duration of a project to their present value. It is derived from the difference between annual revenues and expenditures, adjusted by a specific interest rate. It can be formulated as follows:

$$NPV = \sum_{t=0}^n \frac{(C)^t}{(1+i)^t} - \sum_{t=0}^n \frac{(CO)^t}{(1+i)^t}$$

Where :

NPV : net present value

$(C)^t$: cash inflow in year t

$(CO)^t$: cash outflow in year t

i : interest rate used to calculate NPV

n : project lifespan

t : time

It can be concluded as follows :

NPV = positive, meaning it is accepted; the higher the NPV value, the better

NPV = negative, meaning it is rejected

NPV = 0, meaning it is neutral (normal)

2. Internal Rate of Return (IRR)

IRR is determined by finding the interest rate at which the present value of cash inflows equals the present value of cash outflows, such that the NPV equals zero ($NPV = 0$). Since the interest rate must be identified to achieve an NPV of 0, a trial-and-error approach is required, using the following equation:

$$\sum_{t=0}^n \frac{(C)^t}{(1+i)^t} - \sum_{t=0}^n \frac{(CO)^t}{(1+i)^t}$$

Where :

$(C)^t$: cash inflow in year t

$(CO)^t$: cash outflow in year t

i : interest rate used to calculate NPV

n : project lifespan

t : time

Since project cash outflows generally represent the initial cost (Cf), the equation becomes:

$$\sum_{t=0}^n \frac{(C)^t}{(1+i)^t} - (Cf) = 0$$

It can be concluded as follows:

IRR > (i), means it is accepted

IRR < (i), means it is rejected

3. Benefit Cost Ratio (BCR)

BCR is used to determine whether or not a project should proceed, by calculating the difference between the benefits and the costs incurred. The equation is as follows:

$$BCR = \frac{(PV)B}{(PV)C} = \frac{(PV)B}{(Cf)}$$

Where :

BCR : Benefit-cost ratio

(PV)B : Present value of benefits

(PV)C : Present value of costs

It can be concluded as follows:

BCR > 1, meaning accepted

BCR < 1, meaning rejected

BCR = 1, meaning neutral

4. Payback Period (PP)

The Payback Period (PP) method is a calculation used to determine the time required to recover an investment, providing insight into how long it takes for an investment to yield returns. To determine this, the net cash flow for the projected years must first be calculated. The formula for this calculation is as follows:

$$K_{(PBP)} = \sum_{t=0}^n (CF)_t \geq 0$$

Where:

K: return time

CF_t : cash flow for the t-th period

If the benefits and costs are annual, then the formula becomes:

$$K_{(PBP)} = \frac{\text{Investment}}{\text{Annual Benefit}} \times \text{Time Period}$$

In the payback period method, the investment plan is said to be feasible if $k < n$ and vice versa.

Where:

K : payback period

n : economic life

3. RESULT AND DISCUSSION**1. Mamuju Town Square Location**

Mamuju Town Square, or Maleo Town Square (Matos), is a shopping center in the Mamuju area established by PT Kamanta Bangun Persada (KBP)—alongside a business center—on reclaimed land along the Mamuju coast, with the objective of fostering the regional economy (Hanapi, 2014).



Figure 1. Mamuju Town Square Location
(Source: Google Earth)



Figure 2. Mamuju Town Square Location
(Source: Personal Documentation, 2025)



Figure 3. Mamuju Town Square Location
(Source: Personal Documentation, 2025)

2. Feasibility Analysis of the Mamuju Town Square Project

a) Cost Analysis

The funding for the construction of Mamuju Town Square amounts to IDR 150,000,000,000, consisting of 1/3 (self-funded) and 2/3 (a bank loan of IDR 112,000,000,000), which will be repaid in installments over 5 years at an interest rate (i) of 12% per annum.

The financing data for the Mamuju Town Square project is as follows:

Equity (Own Capital)	: 25% x Rp 150,000,000,000	= Rp 37,500,000,000
Loan Capital (Debt)	: 75% x Rp 150,000,000,000	= Rp 112,500,000,000
Economic Life	: 10 years	
Loan Repayment Period	: 5 years	
Loan Interest Rate	: 12% per annum	

Table 1. Investment Cost Analysis for Mamuju Town Square

No	Description	Cost
1	Development	114.500.000.000
2	Licensing	10.000.000.000
3	Legalization Costs	7.500.000.000
4	Interest Expense	18.000.000.000
Total cost		150.000.000.000

The first-year expenditures for Mamuju Town Square are projected to increase by 5% annually thereafter; however, loan interest expenses are only incurred up to the fifth year, as detailed below:

1. Meeting & Ballroom	Rp 675.000.000
2. Hotel	Rp 1.250.000.000
3. Service Charge	Rp 554.675.000
4. Marketing Cost (UMKM-Kios-Anchor Tenant)	Rp 2.765.000.000
5. Loan Interest Cost	Rp 18.000.000.000

b) Revenue Analysis

Revenue can be defined as the value of services and the quantity of goods produced by a business over a specific period of time (Niti et al., 2024), typically covering a one-year period, with revenue for subsequent years projected to grow by 5% annually. The components of the revenue analysis are derived from:

1. Meeting & Ballroom	Rp 2.150.000.000
2. Hotel	Rp 40.321.000.000
3. UMKM	Rp 235.000.000
4. Kios	Rp 42.652.000.000
5. Anchor Tenant	Rp 1.675.000.000
6. Service Charge	Rp 225.000.000

c) Financial Feasibility Analysis of Mamuju Town Square

Table 2. NPV and IRR Calculation Results

Rate		12%
Year	Cash Flow	Present Value
0	-150.000.000.000	-150.000.000.000
1	64.013.325.000	57.154.754.464
2	68.113.991.250	54.300.056.800
3	72.419.690.813	51.546.905.473
4	76.940.675.353	48.897.190.152
5	81.687.709.121	46.351.799.937
6	104.672.094.577	53.030.140.631
7	109.905.699.306	49.715.756.842
8	115.400.984.271	46.608.522.039
9	121.171.033.484	43.695.489.412
10	127.229.585.159	40.964.521.324
NPV		342.265.137.075
IRR		49%

NPV (Positive Value) = 342.265.137.075 > 0 (Feasible)

IRR = 49% > 12% (Feasible)

Based on the table above, the NPV is 342,265,137,075. Since this value is greater than 0 (NPV > 0), the project is considered feasible according to the NPV method. Furthermore, the IRR is 49%, which is greater than 12%; even if interest rates were to rise to 40% in the coming years, the NPV would remain positive. Therefore, based on the IRR method, the project is also considered feasible.

Table 3. Payback Period Calculation Results

Year	Cash Flow	Cash Flow Cumulative	Investment
1	64.013.325.000	64.013.325.000	150.000.000.000
2	68.113.991.250	132.127.316.250	
3	72.419.690.813	204.547.007.063	
4	76.940.675.353	281.487.682.416	
5	81.687.709.121	363.175.391.536	
6	104.672.094.577	467.847.486.113	
7	109.905.699.306	577.753.185.419	
8	115.400.984.271	693.154.169.690	
9	121.171.033.484	814.325.203.174	
10	127.229.585.159	941.554.788.333	
PP			2 Years 3 Month

Source: Data Analysis

PP = 2 years 3 months < 10 (Feasible)

Based on the table above, the payback period is 2 years and 3 months, meaning that the capital or investment outlay will be recovered within 2 years and 3 months. The project has an estimated economic life of 10 years. Therefore, since the payback period is shorter than the economic life, the project is considered feasible based on the payback period analysis.

Table 4. Benefit-Cost Ratio Calculation Results

Year	Total Benefit	PV (B)	Total Cost	PV (C)
0	0	0	-150.000.000.000	150.000.000.000
1	87.258.000.000	77.908.928.571	23.244.675.000	20.754.174.107
2	91.620.900.000	73.039.620.536	23.506.908.750	18.739.563.736
3	96.201.945.000	68.474.644.252	23.782.254.188	16.927.738.779
4	101.012.042.250	64.194.978.986	24.071.366.897	15.297.788.835
5	106.062.644.363	60.182.792.800	24.374.935.242	13.830.992.863
6	111.365.776.581	56.421.368.250	6.693.682.004	3.391.227.618
7	116.934.065.410	52.895.032.734	7.028.366.104	3.179.275.892
8	122.780.768.680	49.589.093.188	7.379.784.409	2.980.571.149
9	128.919.807.114	46.489.774.864	7.748.773.630	2.794.285.452
10	135.365.797.470	43.584.163.935	8.136.212.311	2.619.642.611
Total	592.780.398.117		Total	250.515.261.043
BCR				2,3662446577

Source: Data Analysis

BCR= 2,366446577 > 1 (Feasible)

From the table above, a BCR value of 2.3662446577 is obtained. Since this value is greater than 1, it indicates that the accumulated benefits exceed the costs incurred. Based on the BCR analysis method, a BCR value greater than 1 signifies that the project is viable.

d) Sensitivity Analysis for Mamuju Town Square

Sensitivity analysis is conducted to determine the extent to which changes in certain factors—based on potential future scenarios—affect the project. In this analysis, a decrease in revenue leads to a reduction in cash inflows, which in turn lowers the NPV, IRR, and BCR values (Amrullah, 2023). Therefore, this sensitivity analysis aims to identify the threshold at which such changes cause the feasibility parameters to reach an unfeasible or critical state (approaching zero). Table 5 below presents the results of the sensitivity analysis regarding a decline in revenue for Mamuju Town Square:

Table 5. Sensitivity Analysis for Mamuju Town Square

REVENUE DECLINES		
Condition	NPV	Description
Down 10%	290.291.059.316	NPV > 0 (Feasible)
Down 20%	223.709.057.451	NPV > 0 (Feasible)
Down 50%	45.874.938.016	NPV > 0 (Feasible)
Down 70%	-72.681.141.607	NPV < 0 (Not Feasible)
Condition	IRR	Description
Down 10%	44%	IRR > 12% (Feasible)
Down 20%	37%	IRR > 12% (Feasible)
Down 50%	18%	IRR > 12% (Feasible)
Down 70%	2%	IRR < 12% (Not Feasible)
Condition	BCR	Description
Down 10%	2,1296201919	BCR > 1 (Feasible)
Down 20%	1,892995726	BCR > 1 (Feasible)
Down 50%	1,183122329	BCR > 1 (Feasible)
Down 70%	0,709873397	BCR > 1 (Not Feasible)

Source: Data Analysis

Based on the sensitivity analysis conducted, it is indicated that a decline in revenue is one of the factors affecting the financial feasibility of Mamuju Town Square. A 70% reduction in revenue has a significant impact on every financial feasibility parameter.

Based on the analysis conducted, the investment cost for Mamuju Town Square is IDR 150,000,000,000, with an assumed economic life of 10 years. The financial feasibility study for this project yields a Net Present Value (NPV) of IDR 342,265,137,075—a positive figure—calculated using a 12% interest rate. This indicates that the Mamuju Town Square project is capable of generating positive value for the community. The Internal Rate of Return (IRR) analysis, based on a 12% interest rate, results in 49%, which exceeds the assumed credit interest rate. The Benefit-Cost Ratio (BCR) analysis—a comparison of costs against the benefits derived from cash inflows and outflows—yields a value of 2.3662446577, demonstrating that the benefits generated outweigh the costs incurred. Furthermore, the Payback Period (PP) analysis indicates a recovery time of 2 years and 3 months, which is well within the 10-year economic life of the project.

Based on the analysis conducted using four methods—Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost Ratio (BCR), and Payback Period (PP)—the Mamuju Town Square development project is deemed feasible.

Furthermore, the sensitivity analysis of the factors examined for the Mamuju Town Square project—specifically regarding a decline in revenue—indicates that the project

remains feasible and profitable even with a revenue decrease of up to 60%; conversely, a 70% decline in revenue renders the project unfeasible, demonstrating a high degree of sensitivity.

4. CONCLUSION

Based on the findings from the feasibility study for the Mamuju Town Square development project, the following conclusions can be drawn:

1. The financial feasibility results for the parameters evaluated for the Mamuju Town Square development project are as follows:
 - a) The Net Present Value (NPV) is 342,265,137,075; the project is therefore considered feasible and profitable, as the NPV is greater than 0.
 - b) The Internal Rate of Return (IRR) is 49%, with a Minimum Attractive Rate of Return (MARR) of 12%; the project is therefore considered feasible and profitable, as the IRR exceeds the MARR.
 - c) The Benefit-Cost Ratio (BCR) is 2.3662446577; the project is therefore considered feasible and profitable, as the BCR is greater than 1.
 - d) The Payback Period (PP) is 2 years and 3 months; the project is therefore considered feasible, as the PP is shorter than the planned project lifespan.
2. Sensitivity analysis regarding the factors evaluated for the Mamuju Town Square project indicates that the project remains feasible and profitable even with a revenue decline of up to 60%. Conversely, a 70% decline in revenue renders the project unfeasible, demonstrating that it is quite sensitive to such changes.

REFERENCES

- Afanin, N. K. (2021). Analisa Kelayakan Finansial Proyek Pembangunan Condotel Grand Kalpataru Syariah Malang. *Jurnal JOS-MRK*, 2(1), 1–5. <https://doi.org/10.55404/jos-mrk.2021.02.01.1-5>
- Amrullah, M. F. (2023). Analisis Sensitivitas Kelayakan Finansial Produksi Kelapa Sawit. *Jurnal Mathematic Paedagogic*, 7(2), 119–128. <https://doi.org/10.36294/jmp.v7i2.3187>
- Anggun, N. (2024). *EVALUASI KELAYAKAN TEKNIK DAN FINANSIAL KARAWANG PREMIUM OUTLET MALL DI KARAWANG JAWA BARAT Shopping Mall merupakan pusat*. 5, 104–108.
- Hanapi, M. Faisal (2016). Bupati Mamuju Apresiasi PT KBP Bangun Mal. Antara News (<https://makassar.antaranews.com/berita/56530/bupati-mamuju-apresiasi-pt-kbp-bangun-mal>)
- Huberman, M. dan. (1992). *Analisis Data Kualitatif*. Universitas Indonesia Press.
- Kasmir, & Jakfar. (2020). *Studi Kelayakan Bisnis* (14th ed.). Prenadamedia Group.
- Leonandri, D. (2023). *STUDI KELAYAKAN BISNIS HOTEL Studi Kelayakan Bisnis Hotel Oleh*. 1–39.
- Marsawal, Dian Awaliah (2021) *PERENCANAAN RUANG TERBUKA HIJAU DALAM MENINGKATKAN KUALITAS RUANG DI KAWASAN PERKOTAAN MAMUJU = THE PLANNING OF GREEN OPEN SPACE TO IMPROVING THE QUALITY OF SPACE IN URBAN AREA OF MAMUJU*. Thesis thesis, Universitas Hasanuddin.
- Maulana, R., & Adriana, M. (2022). Faktor Yang Mempengaruhi Harga Saham Sub Sektor Jasa Konstruksi Dan Bangunan Yang Terdaftar Di Bei. *Jurnal Ekonomi Trisakti*, 2(2), 845–856. <http://dx.doi.org/10.25105/jet.v2i2.14429>
- Niti, S., Yuli, P., Dhiniati, F., & Itteridi, V. (2024). *ANALISIS EKONOMI PADA PERENCANAAN PEMBANGUNAN*. 10(1).

- Raodah, Raodah (2018). Strategi Adaptif Dan Jaringan Sosial Migran Flores di Kota Mamuju Provinsi Sulawesi Barat. *WALASUJI*, 9 (1), hal 141—158
- Pramana, I. M. W., Arya, I. W., & Wiraga, I. W. (2023). *Jurnal Talenta Sipil*. 6(2), 328–335. <https://doi.org/10.33087/talentasipil.v7i2.646>
- Pramana, Y., & Wiguna, I. P. A. (2017). Evaluasi Kelayakan Investasi The Safin Hotel di Kabupaten Pati, Jawa Tengah. *Jurnal Teknik ITS*, 6(2), 1–5. <https://doi.org/10.12962/j23373539.v6i2.23113>
- Soeharto I. (1995). *Manajemen Proyek dari Konseptual sampai Operasional*. Erlangga.
- Syamsuddin. (2020). *Sultra Civil Engineering Journal ISCIJ*. 1(2), 110–122.