

ANALYSIS OF INVESTMENTS IN THE BUILDING OF THE GELORA BUNG TOMO CITY OF SURABAYA

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Abstract

The Gelora Bung Tomo area currently includes a football stadium, three training fields, a wheel-shoe track, a motorcycle racing circuit, and a multipurpose indoor sports building. With the evolving automotive industry, upgrading the circuit from grade D to grade C is necessary to accommodate more races. This involves extending the 650-meter road race track to 1700 meters, including a pit stop area, audience tribune, paddock, and commercial area. The study evaluates the current facilities of the Gelora Bung Tomo (GBT) area in Surabaya and conducts investment analysis to determine financial viability. The research methodology combines quantitative and qualitative approaches using previously obtained primary and secondary data, then compiles cash flow projections and performs investment analysis using investment valuation methods, namely net present value (NPV), internal rate of return (IRR), benefit cost ratio (BCR), and payback period (PP). Based on the results of the analysis with the Net Present Value (NPV) method, if a positive value of Rp. 13.339.690.346 is obtained, then the investment is acceptable. If the benefit-cost ratio is greater than 1,1849, then the project is accepted, and the PP is 30.98 under the time of the investment of 50 years, but the greater the risk faced, the more the overall investment is worthy of being implemented.

Keywords: GBT Circuit Investment, Sensitivity, Net Present Value, Benefit Cost Ratio

1. INTRODUCTION

One important sector that contributes significantly to Indonesian economic growth is the growing automotive industry. The development of the automotive industry itself has a positive impact on investment across the country. Besides, it has a wide impact on the people who work. This development of the automotive industry will definitely have an impact on the automobile sport in Indonesia. In Indonesia itself, motorsport is growing over time. This is demonstrated by the fact that more and more cities or territories have permanent racing circuits that have been updated.

The existence of Bung Tomo's Gelora Area (GBT) currently consists of a football stadium, a ball training field, a wheel shoe track, a motorcycle racing circuit, a multi-purpose building for indoor sports activities, as well as several supporting buildings for activities in the area. As the development of the automotive world today adds a type of vehicle with certain specifications, such as the type of sport 150cc that can be carried out on circuit grade C, Thus, to improve the kind of activities that will be performed in the gelora bung tomo, the necessary development of circuit construction in Gelora Bung Tomo, among others, has a 650-meter road race track with a width of 10–12 m; thus, the

total track is 1700m; pit stop area, which is an area run off width of 20 m; audience tribune; paddock area; as well as commercial area.

The research combines quantitative and qualitative approaches, using previously obtained primary and secondary data to compile cash flow projections and perform investment analysis through methods such as net present value (NPV), internal rate of return (IRR), benefit-cost ratio (BCR), and payback period (PP). The study aims to evaluate the current facilities of the Gelora Bung Tomo (GBT) area in Surabaya and assesses financial viability, risks, and sensitivity to ensure project success. By meeting positive NPV and BCR criteria, the study aims to confirm the investment's feasibility, contributing to Indonesia's economic growth and the development of the automotive sports industry.

2. LITERATURE REVIEW

2.1. Investment Analysis

According to Kuswadi in Zainuri (2021), there are various methods for evaluating investment eligibility, including the commonly used discounted cash flow (DCF) method, using indicators of:

- a. Net Present Value (NPV),
- b. Internal Rate Of Return (IRR),
- c. Benefit Cost Ratio (BCR), and
- d. Break Event Point (BEP)

2.2. Motor Racing Circuits

According to the Fédération Internationale de l'Automobile (FIA), a circuit is a permanent or non-permanent closed track with a starting line and an end line at the same point, built or adapted specifically for car racing or motor racing. (FIA, Guidelines Concerning Specifications and Installation for Motor Racing Circuits, 2011:1). International standard permanent circuits must have the following circuit facilities:

- a. The Pit Building is a circuit main building consisting of several pit boxes or garage pits on the first floor used for the preparation of the race team and its vehicles, while the second floor is usually used for circuit operational offices and hospitality rooms.
- b. The Race Control Tower is the center of control, surveillance, and racing arrangements. In this room, there is room for the Stewards of Meeting and their members used during the race.
- c. This facility includes a clinic or a small hospital that functions similarly to an emergency facility in a general hospital, which is prepared for any possible accident involving a driver, a marshal, or a supervisor.
- d. The main tribune is included in the public facility. The facility must comply with local building regulations, which include rules on crowds, parking spaces, first aid, fire extinguishers, and fire prevention.

2.3. Previous Research

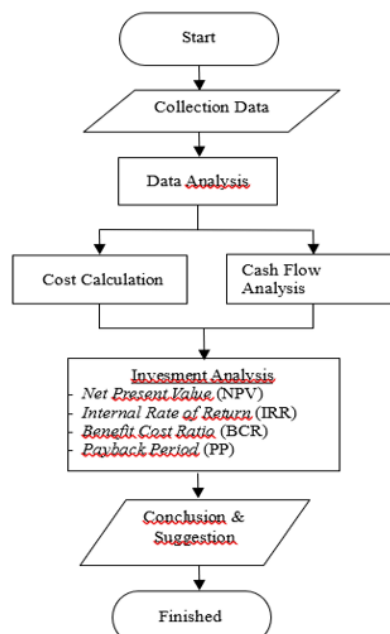
The research carried out by Qonita and Kitri (2019) has to determine whether an apartment investment project is eligible for future investment. Using capital assignment

techniques such as NPV, IRR, PP, and PI, eligibility analysis is calculated based on financial aspects. In addition, risk analysis is also done using sensitivity analysis, scenario analysis, and Monte Carlo simulation. The research carried out by Irwanto and Oetomo (2024) aims to compare government budgets (APBN and APBD) and non-governmental funding schemes. (kredit regional). The eligibility of both financing options was demonstrated by the analysis of government-funded investments, which showed an NPV of 431.148.007.790, an IRR of 40.55%, a BCR of 1.07, and a 3-year repayment period.

The research carried out by Nugroho and Raharja (2022) aims to determine the feasibility of the project by analyzing the financial viability of a project while considering opportunities to accelerate its completion. Financial analysis uses Net Present Value (NPV), Internal Rate Return (IRR), Payback Period (PBP), Benefit Cost Ratio (BCR), and Break Event Point (BEP), while accelerating settlement uses Crashing and/or Fast Tracking methods. The research carried out by Pradana and Oetomo (2024) aims to analyze investments in the development of infrastructure projects at Karangagung Fishing Port (PPI) with Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost Ratio investment analysis methods. (BCR).

3. RESEARCH METHODS

The research was carried out to analyze the investment in the construction of the Gelora Bung Tomo Jawar Road No. 1 circuit in Benowo Village, Pakal district, Surabaya City, with the support of primary and secondary data. Primary data was obtained with direct observation in the field, while secondary information from the government of the city of Surabaya included information on the circuit plan, documents, and regulations related to the research.



Source: Author's Processed Data, 2024

Figure 1. Research Flow Diagram

3.1. Analysis Base on Technical Aspects

The validity analysis of the Gelora Bung Tomo circuit was carried out based on the plan received from the Disbudporpar of Surabaya City. This analysis looks at compatibility with government programmes, spatial compatibility, Building Basic Coefficient (KDB), Building Floor Coefficient (KLB), and Green Area Coefficients (KDH), as well as height limits and accessibility (Giatman, 2011). Rules of the District of Surabaya No. 12 of 2014 on the Surabaya District Area Area Plans 2014–2034 and the Surabaya District Regulations No. 8 of 2018 on the Details of the Area Area Plan and the Zoning Regulations of the City of Surabaya 2018–2038 are used to conduct validity analysis.

3.2. Investment Analysis

Based on the data obtained from Disbudporpar Surabaya, which is the number of circuit usages in 2023 and circuit remuneration, projections of circuit utilization can be made.

a. Expenditure Analysis

The process involves the identification and analysis of data obtained regarding the cost of managing the circuit.

- a) Analysis of operating costs.
- b) Maintenance cost analysis.
- c) Treatment cost analysis.

We calculate circuit management costs in this expenditure analysis using actual operating, maintenance, and repair costs.

b. Revenue analysis

Perform identification and analysis of the existing income data. Establishing the rental rate of the circuit and the use of commercial space or enterprise can be guided by the District Regulations of the City of Surabaya No. 7 Year 2023 on Regional Tax and Regional Retribution.

c. Investment Analysis

Financial viability analysis calculates investment costs, expenditures, and income. Make a cash flow projection before evaluating the investment. The cash flow projection consists of various elements related to the circuit's investment activities, including managerial costs, circuit rental revenue, and commercial space or business rental rate. We carry out cash flow analysis to generate net cash value, using investment assessment methods such as net present value (NPV), internal rate of return (IRR), benefit cost ratio (BCR), and payback period. (PP).

4. RESULTS AND DISCUSSION

4.1. Gelora Bung Tomo Circuit Design Concept

The Gelora Bung Tomo circuit in Benowo Village, Pakal district, Surabaya City has now been awakened a circuit along ± 1200 m consisting of dragrace length ± 450 m

and Road Race long ± 750 m equipped with some lighting, parking area, bando for the office area. The development of the circuit at the location is planned with the addition of the construction of circuit length is ± 650 m to continue the road race, track ± 650 m for pit stops, tribunals, paddock area and commercial area. By doing so the development of Gelora Bang Tomo Circuit in Benowo Village, Sekhal district of Surabaya City so that it produces an area with the capacity of Sirkuit for dragraces 450 m, Roadrace ± 1500 m, with 24 paddocks, 8 commercial areas/retail, Office and audience area.



Source : Disbudporapar Surabaya, 2024.

Figure 2. Master Plan Circuit Gelora Bung Tomo

Based on the Regulations of the District of Surabaya No. 8 of 2018 on the Details of the Space Plan and the Zoning Rules of the City of Surabaya in 2018-2038, based on the RDTR's instructions relating to the allocation of space, the site is located in the zone designated as the General Prasarana Area (SPU-4) Sports Area that is:

- Sports center or sports center its use as a sports centre in SPU-4 zone is included in the limited category, with the limit of the intensity of development in table 1.
- Mix use Usage as a mall, shopping center, lifestyle mall, office, apartment, hostel, hotel, public health facilities, public educational facilities and the like. Included in the limited category with the construction intensity limit on table 1.

Table 1. Provision of Intensity of Space Utilization of Gelora Bung Tomo Circuit Plan in Benowo Village

Intensity	Sport Center	Mix Use
Building Basic Coefficient (KDB)	50%	50%
Building Floor Coefficient (KLB)	1,5 points	2 points

Intensity	Sport Center	Mix Use
Basement site coefficient (KTB) for roads ≥ 16 meters	65%	65%
Green Area Coefficient (KDH)	$> 10\%$	$> 10\%$
Building height The maximum number of basement floors permitted • Road width ≥ 40 meters: 3 floors • Road width: $16 \text{ s/d} < 40$ meters: 1 floor Basement site coefficient (KTB) for roads ≥ 10 meters The number of basement floors for each road is approximately 10 meters.	25 meters 3 Level 1 Level 65% 3 Level	40 meters 3 Level 65% 3 Level
* Building height provisions: consider the height zone, width and land area as well as intensity provisions.		

Source: Surabaya City Regional Regulation Number 8 of 2018,
Author's Processed Data, 2024



Source: Surabaya City Regional Regulation Number 8 of 2018,
Author's Processed Data, 2024

Figure 3. Detailed Map of the Spatial Plan for Sirkuit Gelora Bung Tomo

4.2. Investment Analysis

Analysis of data on components of cost compilation of investments is used to perform cost analysis on Gelora Bung Tomo Circuit located in Benowo Village, Pakal district, Surabaya City. So the project will be done in two phases, in 2025 and 2028. The highway circuit and the tribune will be the first stage.

Table 2. Costs of Construction of the Gelora Bung Tomo Circuit

No.	Year	Investment Cost Component	Total Cost (Rp.)
1	2025	Physical Planning Cost /DED	588.378.920
		Physical Construction Cost	21.980.606.224
		Supervision Fee (Construction Management Fee)	729.021.742
		Total	23.298.006.886
2	2028	Physical Construction Cost of Tribune Work	27.267.026.183
		Supervision Fee (Construction Management Fee)	753.734.400
		Total	28.020.760.583

Source: Author's Processed Data, 2024

4.2.1. Expenditure Analysis

Management cost analysis to find out how much it takes to manage a circuit over a year. This is done by calculating actual operating, maintenance, and maintenance costs. The results of the cost analysis of circuit management in 2026 can be presented in the table 3.

Table 3. Management Cost of Gelora Bung Tomo Circuit

No.	Management Cost Component	Total Cost (Rp.)
1	Operating Cost	236.640.561
2	Maintenance Cost	210.991.797
3	Upkeep Cost	5.665.473
Total Management Cost (Rp.)		453.297.834

Source: Author's Processed Data, 2024

The table 3 shows that the annual costs for managing the Gelora Bung Tomo Circuit in Benowo Village amounted to Rp. 453.297.834, consisting of the operating costs of Rp. 236.640.561, the maintenance costs of Rp. 210.991.797, and the care costs of Rp. 5.665.473. The table 4 outlines the management costs needed in 2029 :

Table 4. Management Cost of Gelora Bung Tomo Circuit

No.	Management Cost Component	Total Cost (Rp.)
1	Operating Cost	640.447.829
2	Maintenance Cost	492.193.913
3	Upkeep Cost	25.321.433
Total Management Cost (Rp.)		1.157.963.175

Source: Author's Processed Data, 2024

Table 4 shows that the annual costs for managing the Gelora Bung Tomo Circuit in Benowo Village amounted to Rp. 1,157,963,175, consisting of operating costs of Rp. 640,447,829, maintenance costs of Rp. 492,193,913, and care costs of Rp. 25,321,433.

4.2.2. Revenue Analysis

Before lease or permission of use, it is necessary to set the rental rate of the circuit or to review the existing rental price due to the renewal or value added of the asset. (Regional Regulation of Surabaya City Number 7 of 2023 concerning Regional Taxes and Levies). Circuit usage in 2023 is presented in the table 5:

Table 5. Usage Gelora Bung Tomo Circuit in 2023.

Component	Number	Hour	Day	Number per Month
Motorcycle	5	4	16	640
Car	5	4	8	320
Event	1		2	2
Blok	1		2	2
Electricity	1	8	2	16
Water	1		2	2

Source: Author's Processed Data, 2024

Based on the rental rate that has been established, then after that it is necessary to do the calculation of rental income. Projections of revenue for the year 2026 are presented in the table 6:

Table 6. Gelora Bung Tomo Circuit Revenue of 2026

Component	Number of Vehicles	Retribution Hour/day (Rp.)	Total Revenue (Rp.)
Motorcycle	640	35.000	22.400.000
Car	320	40.000	12.800.000
Event	4	10.000.000	40.000.000
Block	1	4.500.000	4.500.000
Electricity	32	180.000	5.760.000

Component	Number of Vehicles	Retribution Hour/day (Rp.)	Total Revenue (Rp.)
Water	4	450.000	1.800.000
Estimated Circuit Rental Revenue Monthly			87.260.000
Estimated Circuit Rental Revenue Every Year			1.047.120.000

Source: Author's Processed Data, 2024

Table 6 shows that revenue from training for motor vehicles amounted to Rp. 22.400.000 per month, for cars, Rp. 12.800.000 per month, and for events, Rp. 52.060.000 per event per month for 4 days. As for the 2029 revenue projections, you can see in the table 7.

Table 7. Gelora Bung Tomo Circuit Revenue of 2029

Component	Number of Vehicles	Retribution Hour/day (Rp.)	Total Revenue (Rp.)
Motorcycle	640	35.000	22.400.000
Car	320	40.000	12.800.000
Event	4	10.000.000	40.000.000
Block	0	4.500.000	0
Electricity	32	180.000	5.760.000
Water	4	450.000	1.800.000
Paddock	48	3.600.000	172.000.000
Estimated Circuit Rental Revenue Monthly			251.240.000
Estimated Circuit Rental Revenue Every Year			3.014.880.000

Source: Author's Processed Data, 2024

Table 7 shows that revenue from training for motor vehicles amounted to Rp. 22.400.000 per month, for cars, Rp. 12.800.000 per month, and for events, Rp. 216.040.000 for 1 event per month for 4 days. Then the estimated income of rental of business / commercial space of Gelora Bung Tomo Circuit in Benowo Village, Pakal District, Surabaya City is presented in the table 8:

Table 8. Estimated income from rental of business.

Component	Number	Retribution Per month (Rp.)	Total Revenue (Rp.)
Business Room	8	14.400.000	115.200.000
Estimated income from rental of business space per month			115.200.000
Estimated income from rental of business space annually			1.382.400.000

Source: Author's Processed Data, 2024

The rental rate for business/commercial space on Gelora Bung Tomo Circuit in Benowo Village, Pakal district, Surabaya city is Rp. 115.200.000 per month. The total

estimated rental income of business and commercial space, with a total of 8 businesses and commercial spaces, is Rp. 1.382.400.000 each year

4.2.3. Investment Analysis

We conducted an investment analysis to assess the investment value of the Gelora Bung Tomo Circuit in Benowo Village, Pakal District, Surabaya City. This study uses Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR), and Payback Period (PP) methods to analyze investments with cash flow projections using the discounted cash flow method, based on the following assumptions and terms:

- We estimate the financial projection to be 50 years for the lifetime of the circuit building plan.
- The rental level is 100% (complete private business or commercial space).
- Based on the average of Surabaya City inflation over the last five years, we expect circuit management costs to rise by 3,173% each year.
- Based on the average economic growth in Surabaya City over the past five years, we estimate that circuit rental rates will increase by 2,00% every two years.
- The interest rate refers to the Bank of Indonesia's establishment in 2024, with an average of 6.00% for the months of January–March.

The investment evaluation results for each alternative rental rate of Circuit Gelora Bung Tomo in Benowo Village, Pakal district, and Surabaya City are presented in the table 9:

Table 9. Investment Analysis

No.	Investment Parameter	Result	
1	NPV (Rp.)	13.339.690.345	Feasible
2	IRR (%)	7.641	Feasible
3	BCR	1.1849	Feasible
4	PP (Year)	30.98	Feasible

Source: Author's Processed Data, 2024.

The above table 9 shows that the NPV is Rp. 13.339.690.345, the IRR is 7,641%, the BCR is 1,1849, and the PP is 30,98 years, indicating that it is considered appropriate

5. CONCLUSION

Technical analysis suggests that the construction of the circuit is worth doing with the conditions of adequate space utilization intensity, a building basic coefficient (KDB) of 50%, a building floor coefficient (KLB) of 1.5 points, a building maximum height of 25 meters, and a green area coefficient (KDH) of more than 10%.

If an investment analysis using the NPV assessment method produces a positive value, then the investment is acceptable. Then the value of the IRR, or the return rate of an investment with a value greater than the discount factor of the plan, is 6%, the benefit

value, or BCR, is greater than 1, and the payback period in the 30th year is below the 50-year benefit period, but the longer the return period, the greater the risk faced.

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