

# FEASIBILITY ANALYSIS FOR HOSPITAL DEVELOPMENT USING COST-BENEFIT APPROACH: A CASE STUDY IN LEGOK DISTRICT, TANGERANG REGENCY

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## ABSTRACT

This study evaluates the financial feasibility of hospital development in Legok District, Tangerang Regency, using a cost-benefit approach. The research aims to assess the economic viability of constructing healthcare infrastructure to address the region's increasing demand for medical services. The findings indicate that the project is financially viable, with a Net Present Value (NPV) of IDR 1.2 billion, an Internal Rate of Return (IRR) of 20.30%, a Payback Period (PP) of 6 years, and a Benefit-Cost Ratio (BCR) of 2. Additionally, qualitative analysis based on stakeholder interviews confirms that the hospital will help meet the growing healthcare needs, particularly for prevalent diseases such as respiratory infections, hypertension, and gastritis. The study underscores the necessity of healthcare infrastructure development in rapidly growing suburban areas with inadequate medical facilities. Despite limitations in financial projections and interview scope, the results affirm the project's feasibility and strategic importance. The study recommends sustained government support, private sector involvement, and further research to ensure long-term sustainability.

**Keywords:** Cost-Benefit Analysis; Financial Feasibility; Hospital Development, Suburban Healthcare; Infrastructure Investment.

## INTRODUCTION

Legok District, located within Tangerang Regency, is currently experiencing rapid population growth, largely due to urbanization and the conversion of land into residential areas. The 2023 data from the Central Statistics Agency (BPS) shows the population of Legok District has reached 124,324, consisting of 63,502 males and 60,822 females. With this growing population, the district

faces an increasing demand for healthcare services, making it critical to evaluate the capacity of the existing healthcare infrastructure.

As shown in Table 1, Legok District consists of 11 villages, each with varying population densities and healthcare needs.

Table 1 Population, Population Distribution Percentage, Population Density, and Sex Ratio by Village/Subdistrict in Legok District in 2023

Village/Subdistrict	Male Population	Female Population	Total Population	Population Percentage	Population Density (per Km <sup>2</sup> )	Sex Ratio
Babakan	7,290	7,096	14,386	11.65	7,304.81	102.73
Caringin	6,113	5,906	12,019	9.57	5,307.74	103.50
Serdang Wetan	7,770	7,543	15,313	12.39	4,742.78	103.01
Babat	4,722	4,372	9,094	7.22	2,228.36	108.01
Ciangir	3,681	3,440	7,121	5.68	1,996.03	107.01
Legok	7,475	7,132	14,607	11.79	6,014.38	104.81
Palasari	6,552	6,285	12,837	10.42	2,660.87	104.25
Bojongkamal	3,913	3,841	7,754	6.20	2,355.15	101.87
Rancagong	7,572	7,201	14,773	11.93	2,665.68	105.15
Kemuning	4,515	4,332	8,847	7.14	3,565.09	104.22
Cirarab	3,899	3,674	7,573	6.01	2,105.03	106.12
Total Legok District	63,502	60,822	124,324	100	3,335.09	104.41

Source: Legok District Statistics 2024

As shown in Table 3, The demand for healthcare is further exacerbated by a high Crude Morbidity Rate (CMR) of 25%, which translates to over 31,000 cases of illness annually. Larger villages like Serdang Wetan and Rancagong contribute significantly to the morbidity figures, with 3,828 and 3,693 cases per year, respectively. This increasing burden on healthcare facilities calls for a strategic approach to expand and enhance the healthcare infrastructure in the region.

Table 3: Projections of Morbidity in Legok District, Tangerang Regency

Village/Subdistrict	Population	Morbidity per Year	Morbidity per Month	Morbidity per Day
Babakan	14,386	3,596	300	10
Caringin	12,019	3,005	250	8
Serdang Wetan	15,313	3,828	319	11
Babat	9,094	2,274	189	6
Ciangir	7,121	1,780	148	5
Legok	14,607	3,652	304	10
Palasari	12,837	3,209	267	9

Village/Subdistrict	Population	Morbidity per Year	Morbidity per Month	Morbidity per Day
Bojongkamal	7,754	1,939	162	5
Rancagong	14,773	3,693	308	10
Kemuning	8,847	2,212	184	6
Total Legok District	124,324	31,081	2,590	85

Source: Legok District Statistics 2024

As shown in Table 4, The district's healthcare challenges are compounded by a shortage of facilities. The current hospital-to-population ratio remains below the recommended threshold of 1:1,000 people. Furthermore, the limited availability of healthcare services at both primary and secondary levels, coupled with financial barriers to access, leaves many residents underserved.

Table 4 Healthcare Facility to Population Ratio in Tangerang Regency in 2023

Population	Hospital	Puskesmas	Clinic	Hospital-to-Population Ratio	Puskesmas-to-Population Ratio	Clinic-to-Population Ratio
3,309,365	27	44	172	0.008	0.013	0.051

Source: Processed by the Team, 2024

This study aims to assess the financial feasibility of developing a hospital in Legok District, employing a cost-benefit analysis approach. The objective is to evaluate the economic viability of establishing healthcare infrastructure capable of meeting the growing demand in the area. By identifying both the costs and potential benefits, this analysis will provide insights into the long-term sustainability of hospital development while addressing the healthcare gaps in Legok District.

Legok District faces several critical issues that impact the community's ability to access adequate healthcare. The existing healthcare infrastructure, including hospitals and clinics, is insufficient to meet the demands of the rapidly growing population. With a hospital-to-population ratio of less than 1:1,000, the availability of healthcare services is inadequate to provide timely care for residents. Although public health insurance schemes like BPJS exist, they often do not fully cover the cost of medical care or may offer limited access to specialized services. This creates significant financial barriers for many low-income residents who cannot afford out-of-pocket medical expenses. In addition to limited access, the district also lacks specialized medical services. This gap in services

further strains the existing facilities and forces many patients to seek care outside the district. The rapid population growth in Legok District has led to a healthcare demand that far exceeds the available infrastructure. As a result, healthcare facilities have become overcrowded, waiting times are long, and the quality of care has diminished.

To address these pressing issues, the proposed solution focuses on developing a financial feasibility analysis for establishing a hospital in Legok District. This approach aims to create a sustainable healthcare facility that can address the growing demand for services and bridge the gap between healthcare needs and available resources. This study will focus on stakeholders such as local government bodies, healthcare providers, non-governmental organizations (NGOs), and potential investors. The involvement of these stakeholders is essential to ensure that the hospital development is aligned with local healthcare needs and is financially viable in the long run.

The development of healthcare facilities, especially hospitals, relies heavily on financial feasibility, particularly in areas with rapid population growth. Studies like those by Lee et al. (2018) and Saragih et al. (2021) highlight the importance of cost-benefit analysis (CBA) in assessing the viability of hospital projects, with attention to return on investment and social impact. Global research, including WHO (2017) and Castillo et al. (2016), stresses the need for long-term impact assessments in suburban areas undergoing economic and social change. Suburban regions, like Legok District, often face healthcare access gaps, with limited secondary care services. Studies by the Ministry of Health (2022) and Prasetyo et al. (2019) show that rapid population growth and insufficient healthcare investment exacerbate these challenges.

## **IMPLEMENTATION AND METHODS**

This study aims to analyze the financial feasibility of hospital development using a cost-benefit approach in Legok District, Tangerang Regency. The location was chosen based on its potential population growth, healthcare service needs, and existing infrastructure challenges. The

study was conducted from July to December 2024, involving approximately 50 participants, including community representatives, healthcare workers, village officials, local government representatives, BPJS Health administrators, and potential investors.

The approach utilized a combination of Community-Based Research (CBR) and Participatory Action Research (PAR). The initial stage involved surveys to gather epidemiological and demographic data, followed by in-depth interviews and focus group discussions (FGD) to identify the community's healthcare needs. Participatory workshops were conducted to identify local assets and potentials that could support hospital development. Furthermore, the community participated in cost-benefit analysis simulations to evaluate the social, economic, and cultural impacts of hospital development.

To strengthen the theoretical foundation of this study, financial feasibility analysis was grounded in several financial theories, including the Net Present Value (NPV) method, Internal Rate of Return (IRR), Payback Period (PP), and Cost-Benefit Analysis (CBA). The NPV method was used to determine whether the hospital investment would generate positive financial returns over time, while the IRR provided an estimate of the expected rate of return. The PP approach measured the time required to recover the initial investment, and the CBA was applied to assess the overall socio-economic benefits compared to the costs incurred. These financial theories ensured a rigorous evaluation of the hospital development's long-term viability (Brealey, Myers, & Allen, 2020; Ross, Westerfield, & Jaffe, 2019).

The outcomes were measured both descriptively and qualitatively. Descriptive measurements included epidemiological data, the volume of healthcare service demands, and the community's access to healthcare facilities. Qualitative measurements involved assessing changes in community attitudes toward hospital development, perceived social and economic impacts, and identifying relevant local assets. This approach ensured active community involvement as key agents of change,

as recommended in the PAR method (Mamur et al., 2014) and CBR (Dillard, 2020), with adaptations to the local context in Legok District.

This study is expected to produce recommendations that are not only financially feasible but also relevant, applicable, and sustainable in addressing the needs of the Legok District community. The study follows the journal's writing guidelines, ensuring compliance with formatting, citation style, and structural requirements.

## RESULTS AND DISCUSSION

The financial feasibility analysis for the development of a hospital in Legok District, Tangerang Regency, was conducted to provide a strong foundation for investment decisions in the healthcare sector. This activity has positively impacted the community by assessing financial aspects, potential benefits, and the added economic value generated. As shown in Table 5, total investment Rp 180 billion.

Table 5 Investment Components for Hospital Development

No	Description	Total (Rp)
1	Land	45,900,000
2	Building	65,992,500
3	Medical Equipment	61,695,041
4	Office Supplies (Opex and Non-Medical Capex)	2,269,100
5	Vehicles	620,000
6	Pre-Operating Cost	1,105,000
7	Working Capital	2,827,180
Total		180,408,821

Source: Processed by the Team, 2024

As shown in Table 6, The quantitative data analysis revealed that the *Net Present Value* (NPV) of the hospital development project in Legok District is Rp 1.2 billion, with an *Internal Rate of Return* (IRR) of 20.30%, exceeding the discount rate of 10%. Additionally, the *Payback Period* (PP) is 6 years, indicating that the investment can be recovered within a reasonable timeframe. Furthermore, the *Benefit-Cost Ratio* (BCR) of 2 signifies that the benefits gained are twice the costs incurred.

Table 6 Key Financial Indicators of the Hospital Development Project

Description	Value	Parameter	Checked
NPV	Rp 1,211,504,569	>initial investment	√
IRR	20.31%	>6.5%	√
B/C Ratio	2	>1	√
Payback Period	6 Years	≤10 Years	√

*Source: Processed by the Team, 2024*

The strength of this initiative lies in its comprehensive approach, combining financial analysis with community participation in determining healthcare service requirements. However, challenges included limited detailed demographic data and local economic growth projections, which required adjustments to the financial model assumptions. The results demonstrate that the proposed solution effectively addresses investment uncertainties. Key success factors include the commitment of local government and community support for the project. Obstacles encountered included limited initial funding and the complexity of designing a financing plan involving government and private sector funding schemes.

The short-term impact of this activity is an increased community understanding of the importance of investing in healthcare services. Meanwhile, the long-term impact includes improved community welfare through better access to healthcare services and the potential increase in regional revenue from the healthcare sector. With robust analysis, the development of a hospital in Legok District shows promising prospects for realization. Beyond economic benefits, this project also opens opportunities for strategic collaborations between the government and private sector to support the project's sustainability and success in the future.

## CONCLUSION

The financial feasibility analysis of the hospital development in Legok District confirms the project's viability, with an NPV of IDR 1.2 billion, IRR of 20.30%, BCR of 2, and a Payback Period of 6 years. These indicators demonstrate that the benefits significantly outweigh the costs, ensuring a solid return on investment.

The cost-benefit analysis highlights the alignment of this project with the community's need for improved healthcare services. In the short term, the project has raised awareness about the importance of healthcare investment, while long-term impacts include enhanced access to healthcare, improved quality of life, and regional economic growth. This initiative also fosters opportunities for public-private partnerships in hospital development and management. Greater community involvement is recommended for future projects to ensure sustainability and maximize long-term benefits for all stakeholders.

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