

Analysis of Highest and Best Use for Vacant Land in Banjar Laplapan, Petulu Village, Ubud District, Gianyar Regency

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ABSTRACT

Bali as a leading tourism destination has experienced significant growth in the tourism sector. Ubud, the cultural and spiritual center of Gianyar Regency, attracts domestic and international tourists. However, there are still vacant lands in the Ubud tourism zone that have not been optimally utilized, including an area of 2,700 m² in Banjar Laplapan, Petulu Village. This study aims to determine the most optimal land use using the Highest and Best Use (HBU) analysis which evaluates alternative land use based on physical possibilities, legal permits, financial feasibility, and maximum productivity. The research method used mixed method with Sequential Explanatory Design, evaluating three scenarios: villas, restaurants, and sports studios using Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). The results show that villa development is the most feasible choice with an NPV of IDR 639,557,915, an IRR of 57.83%, and a PP of 1.71 years. The restaurant scenario is still feasible with an NPV of IDR 162,038,471, an IRR of 54.26%, and a PP of 1.82 years. The sports studio scenario is not feasible with a negative NPV of -IDR 4,921,141,243, IRR -8.48%, and a PP exceeding 10 years. Based on the HBU criteria, villa development provides the highest value and is recommended as the best alternative.

Keywords: highest and best use; land valuation; villa development; investment analysis; tourism ubud

INTRODUCTION

The tourism sector plays a crucial role in the global economy, contributing approximately 10.4% of global GDP and providing employment for around 330 million people worldwide prior to the COVID-19 pandemic (World Travel & Tourism Council, 2019 report; WTTC, 2024). Tourist expenditures on accommodation, dining, transportation, and services generate substantial financial inflows into host economies, while tourism-related entrepreneurship—such as hotels, restaurants, and local transport services—drives business opportunities (Elgin, 2024; Sánchez del Río-Vázquez et al., 2019). The sector has a dual socio-cultural effect: it creates jobs for local populations and increases income levels, improving living standards in many communities (Croes, 2024; Sánchez del Río-Vázquez, 2019). However, rapid tourism growth frequently results in land-use conflicts, environmental degradation, and social pressures; sustainable land management is essential to balance economic gains, conservation imperatives, and local needs (Baloch et al., 2022; Bhuiyan, 2024; Duong, 2023). Therefore, holistic planning and policy intervention are critical to ensure tourism achieves both socio-economic benefits and environmental sustainability. Globally, the problem of the use of vacant land in tourism areas is a strategic issue that requires special attention. Vacant land that is not optimally utilized has the potential to cause economic inefficiency and reduce the attractiveness of the area (Pratama & Tandelilin, 2020). In various countries, including Indonesia, the existence of vacant land is often a strategic issue in spatial planning, considering that the tourism sector has high economic potential, but requires careful planning to remain sustainable and not damage the carrying capacity of the environment. This phenomenon also occurs in popular tourist destinations such as Bali, where some strategic

lands are left abandoned due to regulatory constraints and low economic incentives for landowners (Sudarma, 2021).

Indonesia, as an archipelagic country with extraordinary natural and cultural wealth, has enormous tourism potential (Mulyadi, 2020; Sudaryanto et al., 2024). Bali, with its unique culture and beautiful natural panoramas, has always been a charm and attraction for tourists (Sari et al., 2025; Supartini et al., 2024). Bali is famous as one of the world's tourism destinations, so it is not surprising that this island is a favored destination for foreign tourists, making its role in the tourism industry unquestionable. The beautiful nature and *Balinese* culture that is still distinctive and full of spiritual activities inspire people to always be creative by integrating it into their daily lives, creating nuances different from other tourist destinations in Indonesia. *Tri Hita Karana*, which is the foundation and concept of *Balinese* life, inspires peace in its surroundings (Sugianthara et al., 2017; Semara & Saputra, 2015).

Gianyar Regency is one of the districts in Bali that is famous for its cultural arts and natural beauty. *Gianyar* consists of 7 sub-districts, 6 sub-districts, and 64 villages, all well-known for their arts that make the regency prominent in Bali. Therefore, *Gianyar* is nicknamed the "City of Art." Besides its arts, *Gianyar* is also known for interesting tourist attractions, such as Goa Gajah in *Bedulu* Village, Monkey Forest in *Ubud*, and Tirta Empul Temple in *Tampaksiring* District. With its distinctive cultural arts and abundant tourist attractions, many foreign tourists visit the area, and the most famous area in *Gianyar* is *Ubud* Village.

Ubud is not an area that has beaches or mountains, predominantly comprising sloping, undulating terrain (Miartha, 2021). However, *Ubud* remains a tourism destination highly sought after by travelers, judging from the data on *Ubud* visitors which is increasing every year (Susanthi & Warmadewi, 2020; Meikassandra et al., 2020). Based on historical developments in the community, one of the *Ubud* figures said that tourism in *Ubud* was introduced as a place to find peace (Meikassandra et al., 2020; Sutarya, 2018; Vickers, 2019). Initially, tourism came from the curiosity of foreign guests about culture and other social activities in *Ubud* (Miartha, 2021). The homes of local residents, which became the forerunners of homestays, were used as resting places for guests who came to *Ubud* (MacRae, 2005).

The development of tourism in *Ubud* has resulted in very rapid economic growth (Anggi et al., 2020). According to Mr. Made Mudra, a local resident, the large number of tourists wishing to stay and learn about *Ubud* led the community to build the first homestay in 1980. The local community thus facilitated tourists who wanted to learn about *Ubud* for an extended period (Couteau, 2013). The development of homestays in *Ubud* experienced very rapid growth until 1998 (Wiguna et al., 2018; Pradana & Arcana, 2020; Hartawan, 2021; Kalpikawati et al., 2020; Rain, 2017; Pinaria et al., 2021; Pitanatri & Pitana, 2019). This led to a shift in the livelihoods of the surrounding community, from being farmers to becoming tour guides or providers of other tourism services in *Ubud* (Rwa, 2017; Susanthi & Warmadewi, 2020). Today, 80 percent of *Ubud* residents make their living from tourism (Narottama & Moniaga, 2021).

Economic data shows promising conditions for the development of the tourism sector in *Gianyar Regency*. In the third quarter of 2024, the economy of Bali Province showed robust growth of 5.43% year-on-year, an increase from the previous quarter which grew by 5.36% and surpassing the national achievement of 4.95%. This growth was mainly supported by the Accommodation, Food, and Beverage Supply sector, which recorded a significant increase. In nominal terms, the GDP of ADHB *Gianyar Regency* in 2024 was recorded at IDR33,046.60billion, an increase of about IDR2,517.18billion from the previous year. The Accommodation and Food and Beverage Supply Sector has consistently been a major contributor to the economic structure of *Gianyar Regency* with a contribution of 23.76% of the total GDP in 2024 (BPS Gianyar Regency, 2025).

However, amidst the rapid development of the tourism sector, many vacant lands have not been optimally utilized in *Ubud*. These vacant lands are scattered in various areas, both in the city center and in rural suburbs. The existence of vacant land in *Ubud* can be an opportunity for more sustainable tourism development. Vacant land is a valuable asset that is often not optimally utilized in the development of urban areas and especially tourism zones. In the context of spatial planning, vacant land offers an opportunity to increase the economic, social, and environmental value of an area.

The urgency of this research arises from the gap between the substantial economic potential of the *Ubud* tourism sector and the large number of vacant lands that are not yet optimally utilized. The projected foreign tourist visits to Bali Province show a significant upward trend, from 6,333,360 in 2024 projected to rise to 21,000,000 in 2054. Specifically for *Ubud*, tourist visits are expected to increase from 1,050,000 in 2024 to 4,538,039 in 2054, reflecting exponential growth of 5% per year. This dramatic increase indicates strong economic opportunities and reflects international tourists' preferences for cultural, natural, and spiritual tourism destinations like *Ubud*.

Previous relevant studies have analyzed the use of vacant land through the Highest and Best Use (HBU) method. Akmaluddin and Utomo (2013) analyzed a vacant land area of 1,150m² on Jl. Gubeng Raya No.54 Surabaya for optimization into commercial property using HBU analysis. The alternatives included hotels, apartments, offices, and shops, finding that the hotel property offered the highest land value at IDR67,069,980.31/m². Research by Budi and Putra (2021) in the *Samudra Residence* residential area, Lamongan, analyzed a vacant land of 2,604m² using HBU with housing and shop development alternatives. Analysis showed that constructing shops provided the highest value with a Net Present Value of IDR1,040,892,697, an Internal Rate of Return of 42.01%, and a post-development land value of IDR5,162,064 per m².

The HBU approach was also applied by Pratama (2011), analyzing the use of vacant land owned by the DKI Jakarta Provincial Government and emphasizing the need to consider the optimal use of vacant land to enhance the economic and social value of the area. Waluyo (2024) in Mojogubang Village, Kemlagi District, Mojokerto Regency, found that utilizing vacant land, including rice fields, for culinary tourism development could improve the welfare of local communities. Pratama and Tandelilin (2020) state that HBU implementation can increase land economic value by up to 30% compared to conventional utilization scenarios.

Dinar Pratama (2020) analyzed a vacant land area of 3,101.5m² owned by PT. Satoria Property on Jalan Dharmahusada Indah, Surabaya. The study considered development alternatives such as apartments, offices, and mixed-use, with mixed-use property offering the highest productivity value and increased land value. Thus, HBU analysis has proven effective in determining the optimal use of vacant land, especially in strategic areas.

The novelty of this research lies in several aspects. First, this study is the first to apply comprehensive HBU analysis to vacant land in the *Ubud* tourism area, considering the unique characteristics of the locale, including the cultural aspects of *Tri Hita Karana* and the presence of the *Kokokan* bird as an ecotourism attraction. Second, the study integrates long-term (30-year) tourist growth projections into financial feasibility analysis, providing a more comprehensive strategic perspective. Third, the study utilizes a mixed method approach with Sequential Explanatory Design, combining quantitative analysis (NPV, IRR, Payback Period calculations) with in-depth interviews with local stakeholders, yielding stronger analytical validity. Fourth, the research considers socio-cultural and environmental impacts more deeply, not only focusing on financial aspects.

The purpose of this study is to identify what types of commercial properties can be developed on 2,700m² of vacant land in the *Ubud* area, and to determine which type of property provides the highest and best value. Specifically, the research aims to implement the *Tri*

Dharma of Higher Education in the realm of research, as well as to analyze and assess vacant land so it can be utilized appropriately through Highest and Best Use analysis.

The benefits of this research are both theoretical and practical. Theoretically, it applies science and theories learned during academic studies, particularly valuation theory, property valuation approaches, and Highest and Best Use concepts. It may serve as a theoretical reference for future research. Practically, the results are expected to enhance knowledge about commercial property types that provide the highest value to vacant land in *Ubud*, serving as a reference for local government in formulating policies for managing vacant land in tourism zones.

The implications of this research are broad, affecting local economic development, spatial planning, and sustainable tourism policy. The research results may promote optimal use of vacant land in tourism areas, ultimately improving the welfare of local communities, driving regional economic growth, and strengthening the competitiveness of *Ubud* as a tourist destination. It also offers methodological advances for more comprehensive HBU techniques that factor in socio-cultural and environmental considerations, not merely economic ones. With HBU-based recommendations, less productive lands in *Petulu Village* can be better directed and tourist destinations optimally utilized, aligning with the vision of sustainable tourism development in Bali.

METHOD

This study uses mixed methods with a Sequential Explanatory Design, combining quantitative and qualitative approaches. Quantitative data is analyzed first, then confirmed with qualitative data through interviews with stakeholders and spatial policy analysis.

The research location is a vacant land area of 2,700m² in *Banjar Laplapan, Petulu Village, Ubud District, Gianyar Regency, Bali*. Primary data was obtained through in-depth interviews with landowners, government officials, and field observations. Secondary data is collected from a variety of existing sources.

The Highest and Best Use (HBU) analysis was conducted based on four main criteria: 1) physically possible, 2) legal permissibility, 3) financially feasible, and 4) maximally productive. Three scenarios were evaluated: villas, restaurants, and sports studios.

The data analysis techniques used include the Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period, and Benefit/Cost Ratio (BCR) methods, with a discount rate of 8.46%, based on commercial bank interest rates in 2025. Market surveys are conducted to determine the highest potential use by collecting data on selling prices, rental prices, occupancy rates, and price trends.

RESULTS AND DISCUSSION

Overview of Research Locations

This research was conducted on a vacant land area of 2,700 m² located in Banjar Laplapan, Petulu Village, Ubud District, Gianyar Regency, Bali. The land has the status of private ownership with a Certificate of Ownership (SHM) No. 1554 in the names of I Gusti Ngurah Gede Suastika and I Gusti Ngurah Nyoman Setiabudi. Previously, this land was used as agricultural land but in recent years it no longer provides optimal yields due to crop failure, weather uncertainty, pest attacks, and declining soil fertility conditions.

Petulu Village is one of the traditional and administrative villages located in the Ubud District area with an area of about 384 hectares. This village has ecological uniqueness as a habitat for the Kokokan bird (white crane) which is a tourist attraction and spiritual symbol of the local community. Geographically, Petulu Village is located on a relatively high plain with

hilly land contours and is surrounded by fertile rice fields. The natural beauty, green landscape, and traditional Balinese spatial planning make Petulu Village have its own attraction, both in terms of ecology and tourism development potential.

The strategic location of this land is reflected in its excellent accessibility. The distance from the center of Ubud is about 10-15 minutes by motorized vehicle and 20 minutes by car, from Ngurah Rai International Airport is about 1.5-2 hours' drive, and from Gianyar City is about 30-45 minutes' drive. The availability of supporting infrastructure such as PLN electricity, clean water and a stable communication network makes this land have high potential for commercial property development. Access to the location is very easy and can be reached from various directions with public transportation including urban transportation and taxi services available 24 hours a day.

Analysis of Legal Aspects

Based on the results of the analysis of the legal aspect, the research land meets all applicable regulatory requirements. In accordance with Bali Provincial Regulation Number 16 of 2009 concerning the Bali Provincial Spatial Plan 2009-2029, Article 66 paragraph 2 states that the Ubud Tourism Area in Gianyar Regency is included in the tourism designation area. Considering that Petulu Village is a village in the Ubud area, the land allocation in this area also refers to the regulation.

Based on the GISTARU (Geographic Information System Spatial Planning) map of Gianyar Regency, the location of the land is in a residential zone (orange) which allows for the construction of housing, trade in services, offices, government, public service facilities, small industries, agriculture, plantations, transportation facilities, RTH, development activities of the city infrastructure network and other residential support activities. This zone is designated for residential activities and their supporting activities with a ban on activities that result in disruption of comfort, security and order of residential activities.

The applicable development technical provisions include a Building Basic Coefficient (KDB) of a maximum of 40% of the land area, a maximum of 15 meters of Building Height Coefficient (KKB), and a minimum Building Boundary Line (GSB) of 8.8 meters based on the Decree of the Regent of Gianyar Number 173 of 1991 concerning the Building Boundary Line in Gianyar Regency. With a land area of 2,700 m², the maximum floor area of the building that can be erected is 1,080 m² (40% × 2,700 m²), providing a flexible enough space for property development while still prioritizing compliance with legal aspects, zoning regulations, and maintaining the balance of the surrounding environment.

Physical Aspect Analysis

The physical condition of the land shows very favorable characteristics for the development of commercial properties. The land has a regular shape with a relatively sloping contour, so it does not require complex cut and fill earthworks. This stable topography allows for various types of property development, ranging from villas, restaurants, fitness centers, to other commercial facilities. Stable contours provide convenience in the construction process as they do not require complex earthworks and allow for a wide range of optimal architectural designs.

The soil in this area is relatively fertile because it used to be part of the agricultural land that supports the traditional Balinese rice field system (Subak). However, due to the increasing conversion of land for tourism needs, some areas around this land are turning into commercial properties such as inns, restaurants, and art centers. Stable soil conditions provide convenience in the construction process and allow for a variety of optimal architectural designs that do not conflict with local government regulations.

The land size of 2,700 m² has a regular soil shape and sloping land contours, making it ideal for commercial property development as well as tourist accommodation. With stable soil characteristics, this land provides ease in the development process and allows for a variety of optimal architectural designs. Based on direct observation, this area has experienced quite rapid development, characterized by the presence of various types of businesses that support its function as a commercial zone such as villas, restaurants, padel sports courts, and others.

In terms of the surrounding environment and its tourism potential, the land is located in an area that still maintains its unique culture and natural environment. One of the main attractions of Petulu Village is the existence of kokokan birds that nest in this village, becoming an attraction for tourists who are interested in the ecosystem and birdwatching. The existence of thousands of white cranes or better known to the local community as kokokan birds that come regularly every afternoon to nest in trees along the village road has become a natural phenomenon that is not only a tourist attraction, but also has spiritual and cultural values that are highly respected by the community.

Economic Aspect Analysis

Macroeconomic conditions show a very positive trend for the development of the tourism sector. The latest economic data shows that in the third quarter of 2024, the economy of Bali Province grew 5.43% year-on-year, an increase compared to the previous quarter which grew 5.36% and exceeded the national achievement of 4.95%. This growth was mainly supported by the Accommodation, Food and Beverage Supply sector which recorded a significant increase due to a surge in foreign tourist visits during the peak holiday season.

In nominal terms, the GDP of ADHB Gianyar Regency in 2024 was recorded at IDR 33,046.60 billion, an increase of around IDR 2,517.18 billion from the previous year which amounted to IDR 30,529.42 billion. This increase reflects the strong recovery and improving economic stability in Gianyar Regency post-pandemic. The growth of 5.47% is an important indicator that the regional economic structure has moved forward again and has a stronger foundation for future development.

Table 1. Percentage Distribution of GDP in Gianyar Regency in 2024

Business Field	Percentage (%)
Provision of Accommodation and Food and Beverages	23,76
Processing Industry	12,07
Agriculture, Forestry and Fisheries	11,78
Construction	11,53
Large and Retail Trading	8,17
Information and Communication	6,61
Government Administration	5,26
Real Estate	4,14

Business Field	Percentage (%)
Health Services and Social Activities	3,59

Source: BPS Gianyar Regency, 2025

The Accommodation and Food and Beverage Supply sector has consistently been a major contributor to the economic structure of Gianyar Regency with a contribution of 23.76% of the total GDP in 2024. This confirms that the tourism sector remains the backbone of the region's economy. Although it had experienced heavy pressure due to the COVID-19 pandemic with a contribution of only 19.77% in 2020 and 18.11% in 2021, along with the implementation of various tourism sector recovery policies, tourism activities gradually began to bounce back.

Projected data on tourist visits shows a very encouraging growth trend. Based on calculations using the exponential growth method with a growth rate of 5% per year, the projection of foreign tourist visits to Ubud uses the formula:

$$Y_t = Y_0 \times (1 + r)^t$$

Where:

- Y_t = projected number of visits in year t
- Y_0 = number of base visits in 2024 (1,050,000)
- r = annual growth rate (5%)
- t = year difference from the 2024 base year

Table 2. Projected Foreign Tourist Visits to Ubud 2024-2034

Year	Projected Visit	Year	Projected Visit
2024	1.050.000	2030	1.407.100
2025	1.102.500	2031	1.477.455
2026	1.157.625	2032	1.551.328
2027	1.215.506	2033	1.628.894
2028	1.276.281	2034	1.710.339
2029	1.340.095	2054	4.538.039

Source: Data processed by the author, 2025

The projected results show an increase from 1,050,000 visits in 2024 to 4,538,039 visits in 2054, reflecting the enormous market potential for tourism property development. The significant increase in the number of visits over a long period of time shows the strong economic potential, and reflects the preference of international tourists for cultural, natural, and spiritual tourist destinations such as Ubud.

Microeconomic analysis shows that the GDP per capita of Bali Province will reach around IDR 62.29 million in 2024, while the GDP per capita of Gianyar Regency in 2023 will be recorded at IDR 58.26 million. This reflects the high purchasing power of the community, supporting the demand for quality residential and commercial properties. The poverty rate in Gianyar Regency in 2024 is estimated to be at 4.5%, relatively lower than other districts in Bali, reflecting the improvement in welfare driven by the tourism, MSME, and agriculture sectors.

Scenario Determination and Planning

Based on the results of field observations, interviews with stakeholders, and market potential analysis, three development scenarios were determined that are most suitable for the characteristics of the region and market needs. The selection of these three scenarios is based on several considerations: first, Ubud is known as a tourist destination that prioritizes natural beauty, tranquility, and cultural nuances; second, tourism growth encourages the need for supporting facilities; Third, the trend of a healthy lifestyle and increased interest in sports activities opens up opportunities for the development of sports facilities.

Scenario 1: Villa Development The development of an exclusive villa complex is designed to meet the high demand for accommodation that offers privacy, comfort, and an authentic experience for tourists. The design includes 7 two-storey villas with a total building area of 1,080 m² according to KDB 40%, a modern minimalist design concept with Balinese tropical nuances, and complete facilities in the form of a swimming pool, parking area, green open space, and rice field views around the villa area.

Table 3. Distribution of Villa Scenario Building Area

Component	Percentage	Area (m ²)	Information
7 Units Villa (2 Floors)	40%	1.080	Each villa ±154.3 m ² and a total of ±308.6 m ² per villa
Swimming pool	15%	405	Size customized as required
Parking	20%	540	Enough for ±20 cars
Green Open Space	25%	675	Parks, walking trails, outdoor facilities
Total	100%	2.700	All land allocated

Source: Data processed by the author, 2025

Scenario 2: Restaurant Development Land use for a minimalist modern restaurant that blends with nature, designed with an open and environmentally friendly concept. The restaurant is built on 2 floors to optimize the function of the space and provide a comfortable experience for visitors. The space division includes indoor and outdoor dining areas, main and storage areas, cashier and reception areas, toilets and customer facilities on the 1st floor, as well as lounges, VIP dining, additional dining areas with balconies, and manager's office space on the 2nd floor.

Scenario 3: Sports Studio Development The sports studio is designed with a modern minimalist concept that combines complete fitness facilities with green areas to provide a healthy and comfortable atmosphere. The studio is built on 2 floors with an open and functional design, maximizing the use of natural lighting and air circulation. The facilities are divided into indoor and outdoor areas, providing a variety of activities for visitors with a variety of spaces including gym and weightlifting areas, group training rooms, reception and lobby, changing rooms and toilets, storage of sports equipment on the 1st floor, as well as cardio and cross-training areas, fitness class studios, manager's offices, and a balcony with a view of the green space on the 2nd floor.

Market Survey and Competitor Analysis

To find out the highest and best potential use of the property studied, a market survey was conducted on various types of commercial property uses in the Ubud tourism area. The survey included the collection of data on selling prices, rental prices, occupancy rates, market

absorption rates, and price trends in recent years through a combination of direct observations, informal interviews with local property agents, and literature studies from online property sites.

The results of interviews with villa owners show that the price rate per night ranges from IDR 1,500,000-3,000,000 depending on the season and facilities. The occupancy rate in the high season (June-December) reaches 90-100%, while in the low season (January-May) it ranges from 50-70%. Operational costs per month for maintenance and staff salaries range from IDR 10,000,000-50,000,000 depending on the size of the villa. Monthly gross income can reach IDR 500,000,000-1,000,000,000 but is uncertain depending on the season.

For the restaurant sector, the interview results show that the capacity ranges from 20-70 seats with a menu price of Rp 35,000-150,000 per portion. Operating hours are generally 7.00-22.00 WITA with monthly expenses of IDR 10,000,000-70,000,000. Income in the high season can reach IDR 200,000,000-400,000,000 per month, while the low season ranges from IDR 80,000,000-200,000,000.

Sports studios show a different pattern with a drop-in rate of IDR 75,000-150,000 and a monthly membership of IDR 700,000-1,800,000. The capacity ranges from 20-40 members per session with an operational cost of IDR 30,000,000-55,000,000 per month. High season revenue reaches IDR 120,000,000-250,000,000, while low season is IDR 60,000,000-150,000,000.

Financial Feasibility Analysis

The financial feasibility analysis was conducted using the Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period, and Benefit-Cost Ratio (BCR) methods with a discount rate of 8.46% based on the average interest rate of commercial banks in 2025 obtained from Bank BCA (7.84%), Mandiri (8.50%), BNI (8.53%), and Permata (9%).

The NPV calculation uses the formula:

$$NPV = \sum(CF_t / (1+r)^t) - C_0$$

Where:

- CF_t = Net cash flow in year t
- r = discount rate (8.46%)
- n = term (10 years)
- C₀ = initial investment

Villa Scenario Investment Cost Analysis The villa investment cost is calculated based on the development component using the unit price from the Bali Province Employment Unit Price Analysis (AHSP) in 2024 with inflation adjustments.

Component	Area (m²)	Price/m² (Rp)	Total Cost (Rp)
7 Unit Villa	1.080	5.000.000	5.400.000.000
Swimming pool	405	3.000.000	1.215.000.000
Parking	540	750.000	405.000.000
Green Open Space	675	500.000	337.500.000
Subtotal			7.357.500.000
10% contingency			735.750.000
Total Investment			8.093.250.000

Source: Data processed by the author, 2025

The projected villa income is based on the results of a market survey assuming the rental price per night is IDR 2,000,000-3,000,000 (used IDR 2,000,000 for conservatives), an occupancy rate of 90% based on villa data in Ubud in 2025, and a service charge of 15% of the rental price.

Rental income = $(2,000,000 \times 7 \text{ units}) \times 90\% \times 365 \text{ days} = \text{IDR } 4,599,000,000$
 Service charge = $(300,000 \times 7 \text{ units}) \times 90\% \times 365 \text{ days} = \text{IDR } 689,850,000$
 Total annual income = IDR 5,288,850,000

Annual operational costs include electricity costs of IDR 111,004,000 (based on the need of 400 kWh/m²/year at a rate of IDR 1,444.70/kWh), water costs of IDR 72,900,000 (based on the need of 25 liters/m²/day at a rate of IDR 5,000/m³), employee salaries of IDR 262,500,000 (35% of total operational costs), and maintenance costs of IDR 112,500,000 (15% of total operational costs). The total operational cost is IDR 559,004,000.

Net cash flow per year = IDR 5,288,850,000 - IDR 559,004,000 = IDR 4,729,846,000

Restaurant Scenario Investment Cost Analysis

Table 5. Estimated Investment Cost of Restaurant Scenario

Component	Area (m ²)	Price/m ² (Rp)	Total Cost (Rp)
Indoor Restaurant Building	650	5.500.000	3.575.000.000
Kitchen and Storage	860	4.500.000	3.870.000.000
Outdoor Dining Area	650	3.000.000	1.950.000.000
Parking	450	750.000	337.500.000
Green Open Space	90	500.000	45.000.000
Subtotal			9.777.500.000
10% contingency			977.750.000
Total Investment			10.755.250.000

Source: Data processed by the author, 2025

Projected restaurant revenue assuming an average daily visitor of 120 people, an average expenditure per visitor of IDR 150,000, and a service charge of 10%.

Restaurant revenue = $(120 \times 150,000) \times 365 = \text{IDR } 6,570,000,000$
 Service charge = $(120 \times 15,000) \times 365 = \text{IDR } 657,000,000$
 Total annual revenue = IDR 7,227,000,000

Annual operational costs include electricity costs of IDR 650,115,000 (450 kWh/m²/year for 1,000 m² of operation), water costs of IDR 63,875,000, employee salaries of IDR 420,000,000, and maintenance costs of IDR 180,000,000. The total operating cost is IDR 1,314,000,000.

Net cash flow per year = IDR 7,227,000,000 - IDR 1,314,000,000 = IDR 5,913,000,000

Sports Studio Scenario Investment Cost Analysis

Table 6. Estimated Investment Cost of Sports Studio Scenarios

Component	Area (m ²)	Price/m ² (Rp)	Total Cost (Rp)
Indoor Studio Building	1.080	5.000.000	5.400.000.000
Outdoor Training Area	600	3.500.000	2.100.000.000
Parking	750	750.000	562.500.000
Green Open Space	90	500.000	45.000.000
Subtotal			8.107.500.000
10% contingency			810.750.000

Component	Area (m ²)	Price/m ² (Rp)	Total Cost (Rp)
Total Investment			8.918.250.000

Source: Data processed by the author, 2025

Projected income of sports studios assuming the number of active members is 150 people and the membership rate is IDR 500,000/month.

$$\text{Annual revenue} = 150 \times 500,000 \times 12 = \text{IDR } 900,000,000$$

Annual operational costs include electricity costs of IDR 180,587,500 (500 kWh/m²/year for 250 m² of operation), water costs of IDR 9,125,000, employee salaries of IDR 210,000,000, and maintenance costs of IDR 90,000,000. The total operational cost is IDR 489,712,500.

$$\text{Net cash flow per year} = \text{IDR } 900,000,000 - \text{IDR } 489,712,500 = \text{IDR } 410,287,500$$

Results of the Financial Feasibility Analysis

Based on calculations with an analysis period of 10 years and a discount rate of 8.46%, the following results were obtained:

Table 7. Results of the Financial Feasibility Analysis of the Three Scenarios

Scenario	Initial Investment (Rp)	NPV (Rp)	IRR (%)	BCR	Payback (years)	Period	Status
Villa	8.093.250.000	639.557.915	57,83	4,41	1,71		Proper
Restaurant	10.755.250.000	162.038.471	54,26	4,14	1,82		Proper
Sports Studio	8.918.250.000	-4.921.141.243	-8,48	0,45	>10		Not Eligible

Source: Data processed by the author, 2025

The villa scenario shows the best results with the highest positive NPV of IDR 639,557,915, IRR of 57.83% which is far above the discount rate of 8.46%, BCR of 4.41 which shows that every rupiah of investment generates 4.41 rupiah of benefits, and the fastest payback period is 1.71 years. The restaurant scenario is also feasible with a positive NPV of IDR 162,038,471, IRR of 54.26%, BCR of 4.14, and a payback period of 1.82 years, but with a lower profit margin than villas. The sports studio scenario is not feasible with a large negative NPV of -IDR 4,921,141,243, negative IRR -8.48%, BCR 0.45, and a payback period exceeding 10 years, indicating that this project cannot close the capital in the analysis period.

Maximum Productivity Analysis

The determination of land value uses a residual approach, which is by adding the NPV value generated from the project to the initial investment value. This approach reflects the highest value that can be paid for the land to keep the project financially viable.

$$\text{Property Value} = \text{NPV} + \text{Initial Investment Land Value} = \text{Property Value} - \text{Building Value}$$

Table 8. Calculation of Land Value

Scenario	Property Value (Rp)	Land Value (Rp)	Building Value (Rp)	Land Percentage (%)	Building Percentage (%)
Villa	16.826.057.915	8.732.807.915	8.093.250.000	52	48
Restaurant	21.672.538.471	10.917.288.471	10.755.250.000	50	50

Scenario	Property Value (Rp)	Land Value (Rp)	Building Value (Rp)	Land Percentage (%)	Building Percentage (%)
Sports Studio	12.915.358.757	3.997.108.757	8.918.250.000	31	69

Source: Data processed by the author, 2025

The villa scenario shows the highest land value of IDR 8,732,807,915, proving that this project provides the most added value to the land after deducting development costs. Although the restaurant scenario has a higher total property value, but after deducting the larger building costs, the value of the land produced is still lower than that of the villa. The scenario of a sports studio producing the lowest land value, even lower than the investment value, reflects that the use of land for the construction of a sports studio does not provide optimal value and instead reduces the potential value of the land financially.

Sensitivity Analysis

To measure the resilience of the project to changing market conditions, a sensitivity analysis was carried out to the villa scenario as the best alternative. This analysis is important to understand how sensitive financial outcomes are to changes in key variables such as nightly rental rates, occupancy rates, and operating costs.

Table 9. Sensitivity Test of Projected Parameters of Cash Flow Scenario Villa

Variable Sensitivity	Condition	NPV (Rp)	IRR (%)	Information
Normal Conditions	IDR 2,500,000, 90%	639.557.915	57,83%	Proper
Room rate low 20%	IDR 2,000,000	179.882.464	24,55%	Still eligible
Room rate up 20%	IDR 3,000,000	1.099.233.365	90,12%	Highly feasible
Occupancy dropped to 40%	40%	-212.836.574	-5,23%	Not eligible
Occupancy has increased to 80%.	80%	1.491.952.404	102,37%	Highly feasible
Operating expenses up 43%	IDR 1,000,000,000	325.993.729	35,76%	Still eligible
Operating expenses down 28%	IDR 500,000,000	821.654.439	70,91%	Highly feasible

Source: Data processed by the author, 2025

The results of the sensitivity analysis show that the villa scenario has quite good stability to changes in rental rates. When the rental rate fell by 20%, the project still generated a positive NPV of IDR 179,882,464 with an IRR of 24.55%, indicating that the project is still feasible even though the profit margin is reduced. On the other hand, when the tariff increased by 20%, the NPV jumped to more than one billion rupiah with an IRR of 90.12%.

However, the project is very sensitive to occupancy rates. The decrease in occupancy to 40% caused the NPV to be negative to -Rp 212,836,574 and the IRR to decrease to -5.23%, indicating the project's infeasibility in the worst conditions. This shows the importance of a strong marketing strategy to keep occupancy high, at least above 50% to ensure project viability.

Against changes in operational costs, the project shows good resilience. An increase in operating costs of up to 43% still results in a positive NPV of IDR 325,993,729, while a 28% decrease in operating costs can increase the NPV to IDR 821,654,439.

Comparison with Market Land Value

Based on field surveys and trusted property sites, land prices in the Ubud area vary between IDR 3,000,000 to IDR 4,250,000 per square meter depending on location and accessibility. The research land located in Banjar Laplapan, with a distance of about 3.2 km from Ubud Market, has characteristics comparable to comparative locations such as Singakerta (IDR 3,000,000/m²), Lod Tunduh (IDR 4,250,000/m²), and Pejeng (IDR 3,000,000/m²).

Table 10. Comparison of Land Values in Ubud 2025

Location	Land Area (m²)	Price per m² (Rp)	Total Price (Rp)	Distance to Ubud Market
Research Object	2.700	-	-	±3.2 km
Bali, Ubud	2.800	3.000.000	8.400.000.000	±5.9 km
Lod T 下载	2.358	4.250.000	10.011.500.000	±4 km
Holiday rentals in Ubud	2.500	3.000.000	7.500.000.000	±4.9-5 km

Source: Data processed by the author, 2025

Based on comparative analysis, the land value calculated by HBU for the villa scenario (IDR 8,732,807,915 or around IDR 3,235,113/m²) is in a realistic and competitive range compared to the surrounding market price. This value is even more conservative than some comparison locations, indicating that the analysis conducted is quite accurate and not overestimated.

Social and Cultural Aspects

Analysis of social and cultural aspects shows that Petulu Village has unique characteristics and must be considered in land development. This village has a banjar-based social structure that regulates the order of social, religious, and mutual cooperation. The existence of the Kokokan bird (white stork) has high spiritual value and is believed to be a symbol of ancestral spirits that must be preserved in accordance with the concept of the Tri Hita Karana philosophy.

The people of Petulu Village are very careful about preserving the environment and the balance of relationships between humans, nature, and spirituality. This is reflected in the Kalpataru award that this village has won for its contribution to environmental conservation. In addition to ecological potential, this village also has advantages in the creative economy sector, especially in the field of wood carving art which has been known to the international market.

The development of villas as the best alternative is considered to be most in line with the character of Petulu Village which is based on ecotourism, cultural preservation, and community economic development. The concept of an exclusive villa can provide an authentic experience for tourists while still respecting local values and not negatively impacting local traditions. Villas with limited capacity (7 units) will not cause over-tourism which can disturb the tranquility and preservation of village culture.

Implications of Research Results

The results of HBU's analysis show that not all types of commercial properties are suitable for development in every location. The compatibility between land characteristics, market conditions, and tourist preferences is a key factor in determining the optimal type of

development. The villa scenario demonstrates excellence in all aspects of the HBU: meeting legal requirements, conforming to the physical condition of the land, providing the highest financial return, and generating maximum land value.

The failure of the sports studio scenario in financial analysis shows that despite the growing trend of healthy lifestyles, the market for sports facilities in rural areas such as Petulu Village is still limited. This is different from urban areas which have a higher population density and purchasing power. The restaurant scenario shows good feasibility but has higher operational risks due to the reliance on consistency of food quality, service, and fierce competition in Ubud's culinary sector.

From the perspective of spatial planning, the results of this study provide insight that the development of individual villas with a boutique or exclusive concept is more suitable for areas with cultural landscape characteristics such as Petulu Village compared to large-scale commercial development. This is in line with Bali's vision to develop quality tourism that prioritizes sustainability and cultural preservation.

Implementation Recommendations

Based on the results of the analysis, it is recommended to develop the land into an exclusive villa complex by paying attention to several aspects of implementation. First, the architectural design should integrate elements of traditional Balinese culture with modern amenities to provide an authentic experience for guests. Second, villa management should involve local communities to provide an optimal economic impact for the village.

Third, development must pay attention to the carrying capacity of the environment and not interfere with the habitat of the Kokokan bird which is the main attraction of the village. Fourth, the marketing strategy should focus on the segment of tourists who value cultural and natural experiences, not mass tourism. Fifth, partnerships with tour operators and travel agents that have networks to the right target market are needed.

In terms of financial management, it is recommended to implement a dynamic pricing strategy that adjusts tariffs based on season and demand. In addition, it is necessary to consider phase development to reduce the risk of large initial investments and allow adjustments based on market response.

Based on a comprehensive analysis of the four aspects of HBU (legal, physical, financial, and maximum productivity), it can be concluded that the villa development is the highest and best use of 2,700 m² of vacant land in Banjar Laplapan, Petulu Village. This scenario not only provides the highest economic value with an NPV of IDR 639,557,915 and an IRR of 57.83%, but it is also most aligned with the local socio-cultural and environmental conditions, making it an optimal choice for sustainable land development and providing maximum benefits for all stakeholders.

CONCLUSION

Based on the Highest and Best Use (HBU) analysis of 2,700m² of vacant land in *Banjar Laplapan, Petulu Village*, the construction of a villa complex is determined to be the highest and best use. The villa scenario meets all HBU criteria, with an NPV of IDR639,557,915, an IRR of 57.83%, a payback period of 1.71 years, and the highest residual land value of IDR8,732,807,915. While the restaurant scenario remains feasible, it carries higher operational

risks, and sports studios are not financially viable. The development of villas not only provides optimal economic impact but also aligns with the socio-cultural values and environmental sustainability of *Petulu Village*. This study recommends villa development as the most profitable and sustainable alternative for land use in the *Ubud* tourism area.

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