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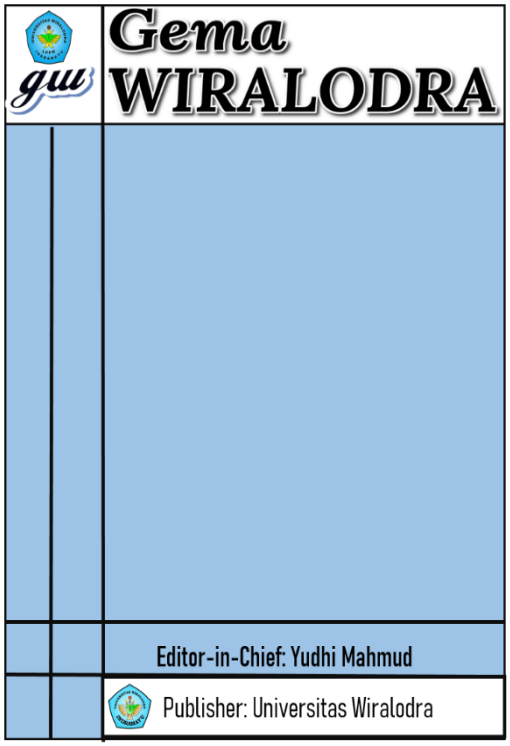

Characteristics of Balinese architectural fat houses in Denpasar City

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Original Article

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Abstract
This research aims to find factors that influence the characteristics of flats with a Balinese architectural perspective and plan a design model for apartments in Bali based on the concept of Balinese architecture. The research method used is a combination of quantitative and qualitative methods. The first stage uses quantitative methods, and the second stage uses qualitative methods. The research sample was taken using nonprobability random sampling with a sample size of 200 respondents. Data analysis was done through univariate analysis by presenting tables, pictures, and graphs. The results of the research show that the factors that influence the characteristics of flats with a Balinese architectural style include the principles of spatial planning with the choice of location in the city of Denpasar, the principles of building layout with a 3-story flat building height, and the selection of building facades with a Balinese architectural style, the principles of utilities and facilities which include green open space, lift facilities, traditional and cultural facilities, centralized parking facilities, easily accessible merchant facilities, health, education, and an integrated and organized waste processing system. Apart from that, Balinese architectural principles such as Tri Hita Karana and the Hulu Teben concept are also used as references. Principles of building layout with a 3-story apartment building height and the selection of Balinese architectural style building facades, principles of utilities and facilities which include green open space, lift facilities, traditional and cultural facilities, centralized parking facilities, merchant facilities, health, easy education accessible, and an integrated and organized waste processing system. Apart from that, Balinese architectural principles such as Tri Hita Karana and the Hulu Teben concept are also used as references. Principles of building layout with a 3-story apartment building height and the selection of Balinese architectural style building facades, principles of utilities and facilities which include green open space, lift facilities, traditional and cultural facilities, centralized parking facilities, merchant facilities, health, easy education accessible, and an integrated and organized waste processing system. Apart from that, Balinese architectural principles such as Tri Hita Karana and the Hulu Teben concept are also used as references.
Keywords: Balinese Architecture, Characteristics, and Flats

1. Introduction

Along with population growth, each year, it impacts the city's carrying capacity system in receiving, managing, and utilizing immigrants. The city's unpreparedness to accommodate the increasingly diverse development of urban activities has an impact on the mixing of various activities concentrated in a particular area, resulting in mismatches between activities and urban management system plans, the emergence of densely populated settlements that are uninhabitable and prone to slums so that a strategy is needed to overcome various problems. in urban planning (Purnamasari et al., 2020).

The increase in population in Bali Province reached 4.32 million people, or a rise of 426.65 thousand people, with an annual population growth rate of 1.01% (BPS, 2021). This increase is directly proportional to the need for housing. As mandated by Law Number 20 of 2011 concerning flats, the government guarantees the fulfillment of the need for adequate and

affordable housing for people categorized as low-income communities by providing infrastructure in the form of apartments to increase the efficiency and effectiveness of space utilization, reduce the area and prevent the emergence of housing and slum settlements, as well as leading to the development of urban areas, meeting social and economic needs. Technically, having flats can be a solution to save land so that the basic building coefficient for each house construction is easily fulfilled (Dharmayanty, 2020).

So far, the city of Denpasar has the largest number of flats in Bali Province. The flats are the Bali Immigration Flats, Mobile Brigade Flats, Bali Provincial Government Flats and Bali POLDA Flats. Most of these flats are occupied for work purposes only so that when the service period is over then the ownership regulation process must be changed. There is still minimal use of flats as permanent residences for the community, especially in Bali, considering that until now the Balinese Hindu community has not been able to accept the concept of flats as residences.

The pros and cons of flats as permanent residences are still a problem in Bali. It is felt that the apartment development model is still unable to accommodate the culture and customs of the Balinese people, especially those who are Hindu. Speculation regarding flats that do not meet the appropriate values/norms for Balinese society has resulted in the lack of public interest in choosing to live in flats. The design of flats in Bali is different from other areas. The Tri Hita Karana concept is believed to be very basic as a reference for development, as well as the criteria for building flats in Bali.

The existence of demands for flats by prioritizing building architectural requirements in accordance with Bali Provincial Regulation Number 5 of 2005 and Denpasar Mayor Regulation Number 25 of 2010 concerning Building Architectural Requirements in Denpasar City is a unique thing to research. The architectural requirements in question are requirements relating to the shape and character of the building's appearance, internal spatial layout, and environmental balance/harmony. In this research, the issue of planning characteristics of flats is examined by taking into account Balinese architectural concepts so as to provide comfort for users, especially the Balinese Hindu community, to live in flats.

According to Adiputra et al. (2016), the Hulu-Teben concept has a significant influence on the characteristics of settlements in Bali, especially in the Bayung Gede Bangli Traditional Village. However, there is still debate regarding the existence of flats in Bali because they do not fulfill the needs of the Panca Yadnya tradition for Hindus who live in flats. In addition, Ministry of Public are Works regulation no. 29/PRT/M/2006 also limits building height, with a maximum height of 15 meters and a minimum of 7 meters. Even though the city of Denpasar has the largest number of flats in Bali Province, most of the flats only used for temporary duty, and ownership regulations must be changed after the term of service is over. The use of flats as permanent residences is still minimal in Bali because the Hindu community has not entirely accepted the concept of flats. In the literature there is a lack of in-depth research regarding the characteristics of flats in Denpasar city, such as Udayana University flats, Denpasar Art Institute flats, Bali POLDA flats in Kesiman and Sanglah villages, STIKIP STIKOM flats, Bali Provincial Government flats in Penatih, and Denpasar Immigration Flats. Therefore, this research aims to examine the characteristics of these flats, with a focus on facade design and space requirements.

This research raises several problem formulations, including factors that influence the characteristics of flats with a Balinese architectural perspective, as well as how flat design models in Bali can be formed based on the concept of Balinese architecture. The research objectives include finding factors that influence the characteristics of flats with a Balinese architectural perspective and planning a design model for flats in Bali based on this concept. The research target is to develop a guide for planning flats with a Balinese architectural

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perspective in Denpasar. This research has limited problems, including emphasizing social and physical variables, with a focus on space requirements for Hindu worship activities and public spaces, as well as utility systems and facade shapes. Distribution of questionnaires was carried out in flats in Denpasar City, and analysis using a Likert scale with the help of the SPSS program. The research method used is a combination of models or sequential explanatory design, which combines quantitative and qualitative approaches sequentially.

2. Methods

This research uses a combination model method or sequential explanatory design, which combines quantitative and qualitative research methods sequentially. In the quantitative stage, data on the characteristics of flats with a Balinese architectural perspective were collected through questionnaires. Meanwhile, in the qualitative stage, data is obtained through interviews, observation and documentation. Qualitative analysis was carried out to complement the quantitative data, and the results were analyzed descriptively and quantitatively. This research focuses on flats in the city of Denpasar, which is an urban area with a high population density in Bali. The types of data used include quantitative and qualitative data. Quantitative data was obtained through questionnaires distributed to selected respondents. Qualitative data was obtained through observation, interviews and documentation of flats in the city of Denpasar. Data sources consist of primary and secondary data. The research instruments used included questionnaires and interviews. Data collection techniques involve surveys, observation, and documentation. The collected data was analyzed using univariate analysis with tables, pictures and graphs.

3. Results and Discussion

a) Comparison of Flats in Denpasar with those in Indonesia

Based on the results of observations and direct observations in the field, several conclusions regarding the condition of flats in the city of Denpasar currently in the field are as follows (Table 1)

Table1

Comparison of Flats (RS) in Denpasar

Criteria	Immigration Hospital	Brimob Hospital	Provincial Government Hospital	POLDA HOSPITAL
Spatial Planning Principles	Form a linear mass	Linear mass form	Linear mass form	Linear mass form
Building Planning Principles	3 floors 47 units type 36	3 floors 71 units type 36	4 floors 90 units type 24	3 floors 35 units type 45
Principles of utility and ergonomics	• There are ramps and good road conditions • There is a special weather-protected parking area • There is a rubbish dump • There is no place/hall for social activities	• There are ramps and good road conditions • Separate parking space for 4 wheelers and 2 wheelers. There is a ramp leading to the flat • There are no special rubbish dumps • There are sports fields and multi-purpose buildings	• There are ramps and good road conditions • Weather protected 2 wheeler parking • There are no special rubbish dumps • There is a sacred building (pelinggih)	• There are ramps and paved roads and there are road markers • Parking for 2 and 4 wheeled vehicles in each block is protected from the weather • There are supporting facilities such as sacred buildings,

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	generator and water pump buildings and security posts
Ornaments and Materials	

Source: 2022 Analysis

It can be concluded that there are no flats that are used by the general public, especially immigrants in Denpasar City. Considering that the population is increasing and the need for housing is increasing, policies regarding flats need to be implemented immediately. According to Pramitasari & Harjanto (2019b) The spatial characteristics of the building and the characteristics of the occupants have an influence on the efficiency of land management and spatial planning. Divergence consists of identifying problems, formulating goals and collecting data about the meaning behind the appearance of Rumah Jawa. The transformation stage is carrying out data analysis and formulating the information obtained into tables to make it easier to produce design concepts.

b) Factors that Influence the Characteristics of Flats with a Balinese Architectural Insight

Based on the SPSS analysis output, several conclusions were obtained regarding the factors that influence the characteristics of flats with a Balinese architectural perspective in the city of Denpasar in the form of:

a. Spatial Planning Principles

The majority of respondents agreed that the location of the flats was in the city of Denpasar (Table 2). As many as 68% of people agree that the location of the flats is in the city of Denpasar. Based on spatial planning data for the City of Denpasar, the land for building flats is in the North Denpasar area, with an area of 3,302,148 Ha, consisting of rice fields (765 Ha), dry land (1,342,668 Ha), land for public facilities (office, field and others: 327.91 Ha), etc.

According to Parwata & Parwangsa (2023)consideration for selecting a location is based on potential functions, such as ease of access to the economy, education, commerce, health, and adequate public infrastructure conditions. So that in the future, selecting the location for the construction of flats is expected to be able to facilitate needs related to land use, namely the ratio of land area for flat buildings or environmental infrastructure or environmental facilities to the area of common land. The land area for apartment buildings is a maximum of 50% (fifty percent) of the common land area. The land area for environmental infrastructure on the common land area is at least 20% (twenty percent). The land area for environmental facilities on common land is at least 30% (thirty percent) in accordance with Minister of Public Works Regulation Number: (Public Works, 1992). Based on Government Regulation no. 4 of 1988 concerning Flats, it is explained in Article 22 that flats must be built in locations that are in accordance with the designation and harmony of the environment, taking into account existing spatial plans and land use.

Table 2
SPSS output in apartment location frequencies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	136	68	68	100

Source: Analysis Results (2022)

b. Building Planning Principles

The choice of mass pattern is of course adjusted based on the needs of each occupant according to the activities or activities in the apartment building. According to Parwata & Parwangsa(2023)The recommended mass pattern is a linear mass pattern which consists of

parallel spaces and has its own function and type which is shaped in a straight line. This mass pattern follows the Balinese concept which uses the Sanga Mandala concept (Kaja-Kangin and Klod-Kauh). Based on the questionnaire in Table 3, the results show that respondents tend to choose a 3-story apartment building height. According to the Minister of Public Works Regulation Number: 60/PRT/1992 concerning Technical Requirements for the Construction of Flats(Public Works, 1992), the height and depth of a building is a building measuring upright above and below ground level whose height limit is adjusted to the technical, technological, psychological and socio-cultural capabilities of the community. Referring to the Bali Province Regional Regulation Number 16/2009, concerning the Bali Province Regional Spatial Plan, in article 95, it is stated that buildings in Bali cannot be higher than 15 meters.

Table 3

SPSS output in frequencies of apartment building height

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	98	49	49	59.5

Source: Analysis Results (2022)

According to Bali Provincial Regulation Number 5 of 2005, building appearance requirements must apply traditional Balinese building norms by paying attention to the form and characteristics of Traditional Balinese Architecture. The principles of traditional Balinese architecture regulated in these regulations include spatial planning principles, layout principles, building form principles, structural form principles, utility and ergonomic principles, ornament and material principles. Based on the results of the questionnaire, it was found that more than 50% of the people in Denpasar City agreed that the appearance of the flat's façade in the Balinese architectural style uses local materials such as brick or sandstone. Table 4 shows the SPSS output in the Balinese architectural style building façade category.

Table 4

SPSS output in Building Façade frequencies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	101	50.5	50.5	100

Source: Analysis Results (2022)

c. Principles of Utilities and Supporting Facilities

Availability of infrastructure facilities such as holy places, meeting places (Banjar Hall), parking lots and other supporting buildings. Figure 1 shows the results of the questionnaire regarding the importance of supporting facilities in flats in the eyes of respondents. Green open space got a result of 53.5%, which means that almost half of respondents think that green open space is very important in apartment facilities. Elevator facilities received a result of 43.5%, which means that some respondents considered that the need for elevators was important in apartment facilities. Banjar facilities received a result of 44.5%, which means that several respondents considered that the need for lifts was important in flat facilities and that there was a banjar hall for cultural customary activities for Hindu communities. Respondents agreed 54, 5% have traditional and cultural facilities for the Hindu community. The parking facility that the majority of respondents agreed with was 48.5% with one parking facility for all residents where car and motorbike parking is arranged in the same location. Trader, Health and Education Facilities got a result of 48.5%, meaning that these facilities were considered important by respondents to meet the needs of apartment facilities.

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Apart from that, 65% of respondents approved the Integrated and Organized Waste Management System facility because this facility is a very important facility for the daily life of the apartment, so that a healthy apartment can be judged from a healthy environment. The parking facility that the majority of respondents agreed with was 48.5% with one parking facility for all residents where car and motorbike parking is arranged in the same location. Trader, Health and Education Facilities got a result of 48.5%, meaning that these facilities were considered important by respondents to meet the needs of apartment facilities.

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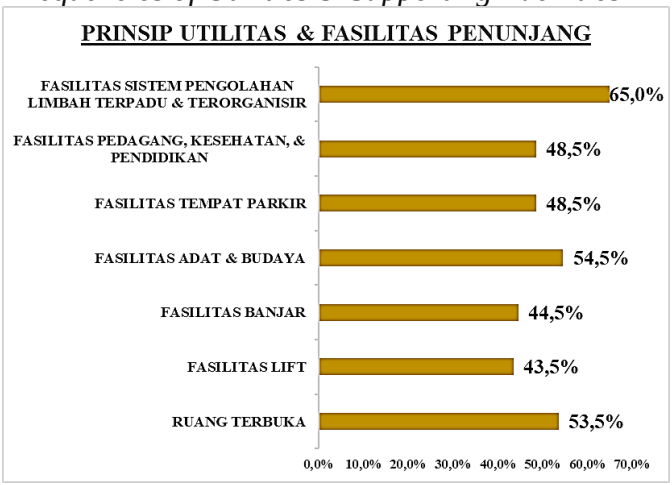
Figure 1

Graphic of Principle Frequencies of Utilities & Supporting Facilities



d. Principles of Traditional Balinese Architecture

The principles of respect for ancestors are the design guidelines in traditional Balinese architecture which are inherited to this day, starting from the older traditional mountainous Balinese architecture in the form of Hulu/kaja (the direction of the mountain/highest of main

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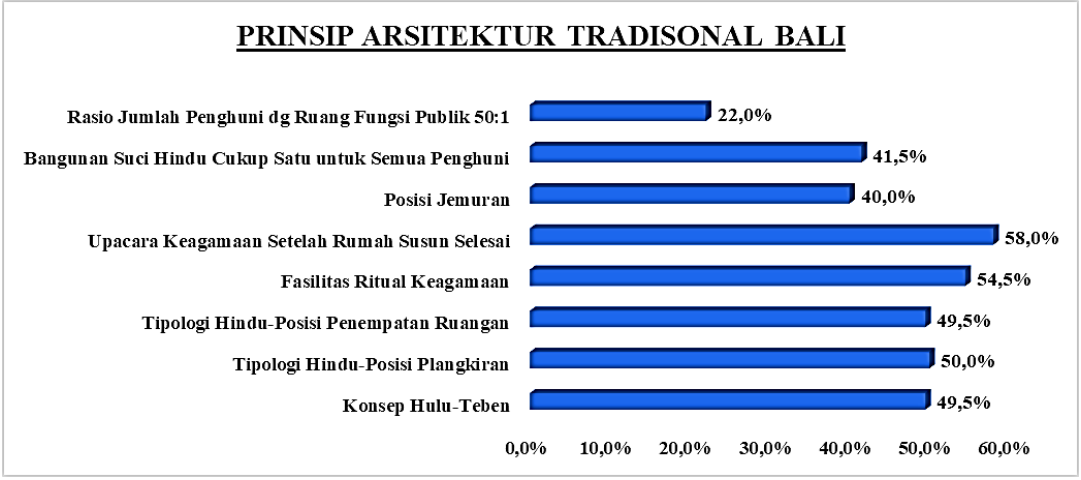
value). Teben/kelod (the direction of the sea has a despicable value and is included in plain Balinese architecture with the addition of the Hulu/kangin direction (the direction of the sunrise which has the main value)-Teben/kauh (the direction of the sunset which has an unsightly value) (Adiputra et al., 2016). Based on the results of the questionnaire the majority of respondents, 49.5%, thought that this was important in arranging rooms in flat residential units. Apart from that, several principles of Balinese architecture were included in the questionnaire, namely the room placement plan following the typology of Balinese houses, which was obtained by 49.5% of respondents, there are langkirans and there are sacred buildings (padmasana and monuments) which received 50% results from respondents, where this was to support the activities of the Hindu community.

Apart from that, religious ritual facilities received 54.5% of respondents' results so this is very important in arranging flats. Religious ceremonies after the apartment is completed are also important in the construction of the apartment and obtained results from 58% of respondents. Arranging flats with Balinese architecture is also important in terms of arranging the position of the clothesline, in this case getting results from 40% of respondents. One Hindu sacred building is enough for all residents, getting a result from respondents of 41.5%. The ratio of the number of occupants to public function space is 50: 1 (50 families versus 1 public space such as bale banjar) received an assessment from respondents of 22% so it is not that important but if it could be implemented it would be better. The graph of the questionnaire results can be seen in Figure 2.

Figure 2
Frequencies graph



c) Flat House Design Model in Bali Based on Balinese Architectural Concepts

The modeling of flats design is based on the results of questionnaires, observations and interviews about flats assessed and various criteria for flats construction from a Balinese cultural perspective.

a. Building Appearance Design

1. Spatial Planning Principles

Aspects of City Architecture, flat and rusunawa form materials that respond to the morphological structure of the shape and space of the city of Denpasar. The appearance of the building must be in harmony with the character of traditional Balinese architecture. Design, Site Aspects Site and building zoning is determined based on local wisdom values, which are based on the Tri Hita Karana Maximum KDB is 60% Maximum KLB is 300% for dormitories and 180% for non-dormitories Front Boundary Line of Building is ½ times the space road

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property + 1 meter or in accordance with the regulations per each Regency in Bali. Side and Rear Borders refer to the regulations per each region or Regency in Bali. As far as possible, maintain the original shape of the site outside the basement plan, arranged in line with the values in Balinese culture who pay attention to the upstream reaches of Tri Hita Karana.

Tri Hita Karana are three main things that cause prosperity and prosperity in human life. Figure V-24 shows the application of the Tri Hita Karana concept in the design model for the appearance of an apartment building with a Balinese architectural perspective. The existence of zoning carried out in modeling the design of flats can be seen in the picture where Parahyangan is realized in the building facilities/holy places contained in the flats where based on questionnaire data of respondents, almost 54.5% of the majority agreed that there are buildings/holy places that are able to facilitate religious activities. Hindus in the flat. Apart from that, the embodiment of the Pawongan element is the form of the flat itself as a place to live and a place to socialize with the people who live in the flat as well as the existence of a multi-purpose bale which can be used as a place for social activities within the flat. The idea of Hulu-Teben is very similar to the profane idea of the sacred. Because of this, some people worry that the existence of flats in this area will pollute Bali's sacred areas and existing holy places that fill the built space. By imagining an attic with a certain level attached to the image of a sturdy clothesline supporting a higher level, the sacredness of Hinduism will fade. As a result, people do not want flats near sacred sites. Besides that,

Based on Figure 3, almost 50% of respondents agreed that the orientation of the building arrangement and room placement of the flat building design followed the Hulu-Teben concept and Balinese building typology. Based on this, Figure 4 shows the design embodiment of the Hulu-teben concept in an apartment design model with a Balinese architectural perspective.

Figure 3
Application of the Tri Hita Karana concept
Source: Analysis Results (2022)

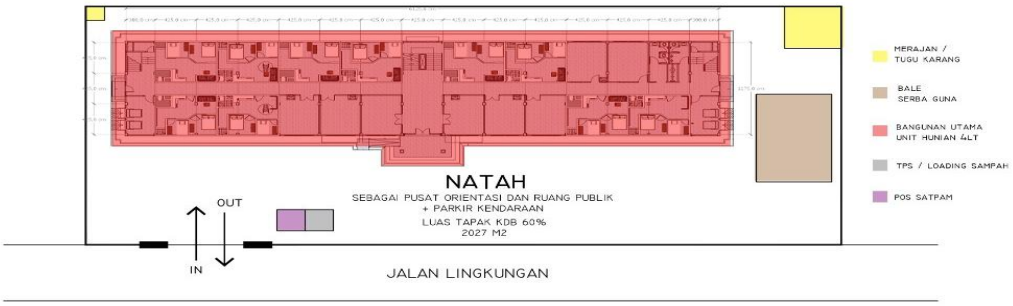
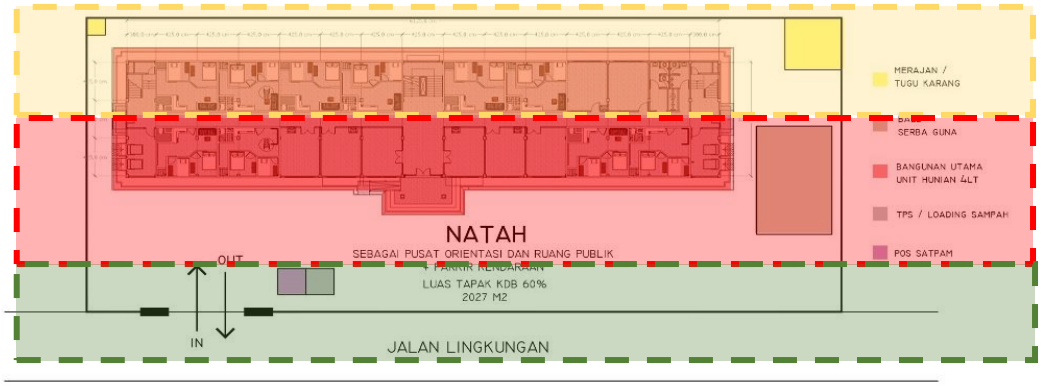


Figure 4
Application of the Hulu-Teben Concept
Source: Analysis Results (2022)



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2. Building Planning Principles

Building design using local architectural elements, especially Tri Angga, (Head, Body and Feet). The appearance of the building is balanced, harmonious and in harmony with the environment. Efficient in the use of resources, both in use and maintenance, beautiful but not excessive. Considering Balinese socio-cultural values in implementing architectural engineering, at least 20% of the visible walls of the building display local Balinese materials per each region or district as building character and strengthening the character of the area. The maximum building height is 15 meters; The height of the ground floor of a building is permitted to reach a maximum of 1.20 m above the average height of the yard or the average height of the road, taking into account harmony and the environment. The maximum number of building floors is 4 floors + 2 basements. The dominant roof shape is the typical Balinese pyramid/saddle roof, which can be combined with a flat concrete plate roof, max. 20% of the roof area visible from view or in accordance with the regulations per each region/district in Bali. Use of celedu on the corners of the pyramid or gable roof, use of murda and bentala on the top of the roof. The body of the building is made with protruding columns or supporting walls, and raised floors or pillars so that they clearly imply the presence of a head, body and feet. use of murda and bentala on the top of the roof. The body of the building is made with protruding columns or supporting walls, and raised floors or pillars so that they clearly imply the presence of a head, body and feet. use of murda and bentala on the top of the roof. The body of the building is made with protruding columns or supporting walls, and raised floors or pillars so that they clearly imply the presence of a head, body and feet.

Tri Angga in the architecture of houses and residential areas, it can be interpreted as spatial arrangements for comfort, harmony and harmony between humans and their environment, both at the scale of houses (umah) and housing (villages). The direction of these values vertically and horizontally is called the Tri Mandala. The value system is based on the earth's axis (mountain kaja, sea kelod), giving the main value in the kaja (mountain) direction and nista in the kelod (sea) direction, while based on the sun's axis the main value is in the direction of sunrise and nista in the direction of sunset. Tri Angga has 3 parts, namely:

a) *Main*Angga: Main Angga is the part that is positioned at the highest or most important position (head), namely the roof of the building.
b) *Intermediate*Angga: Madya Angga is the part located in the middle (body), namely the walls of the building.
c) *Nasty*Angga. Nista Angga is the part that is positioned at the lowest, dirtiest, lowest part (feet), namely the foundation of the building.

Based on these principles, the design model for the appearance of the flat is realized as shown in Figure 5 and Figure 6. Based on Bali Regional Regulation No. 5 of 2005 and Denpasar Mayor Regulation No. 25 of 2010, it is emphasized that the overall figure of the building reflects the characteristics of Balinese architecture. The shape and figure of the building parts must still reflect the Tri Angga (head/roof elements, body/room/wall elements, and foot/foundation elements). Apart from that, the choice of building façade using red brick and sandstone materials was applied so that the concept of flats with a Balinese architectural perspective was increasingly visible.

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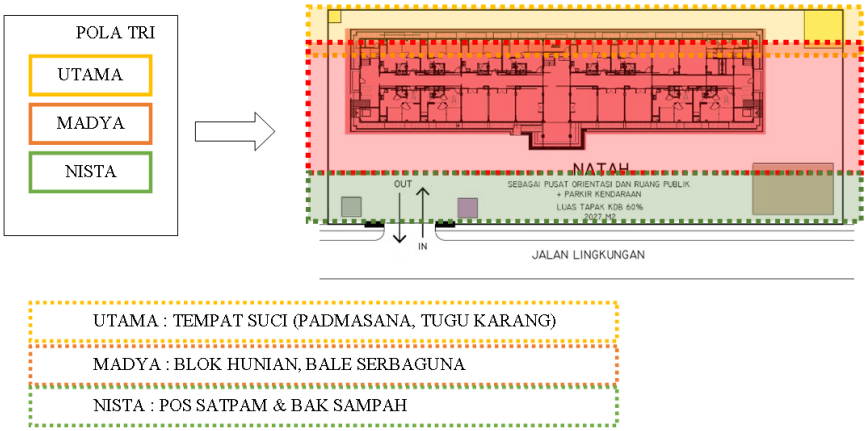
Figure 5
Application of the Tri Angga Concept
Source: Analysis Results (2022)

Figure 6
Principles of Apartment Spatial Planning
Source: Analysis Results (2022)

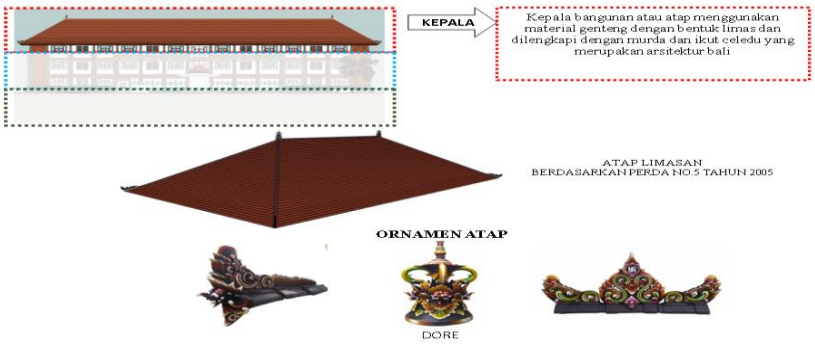


d) Ornament and Material Concept

The concept for ornaments and materials can be seen in Figure 7 and Figure 8.

a. Ornaments

Figure 7
Application of Building Ornaments
Source: Analysis Results (2022)



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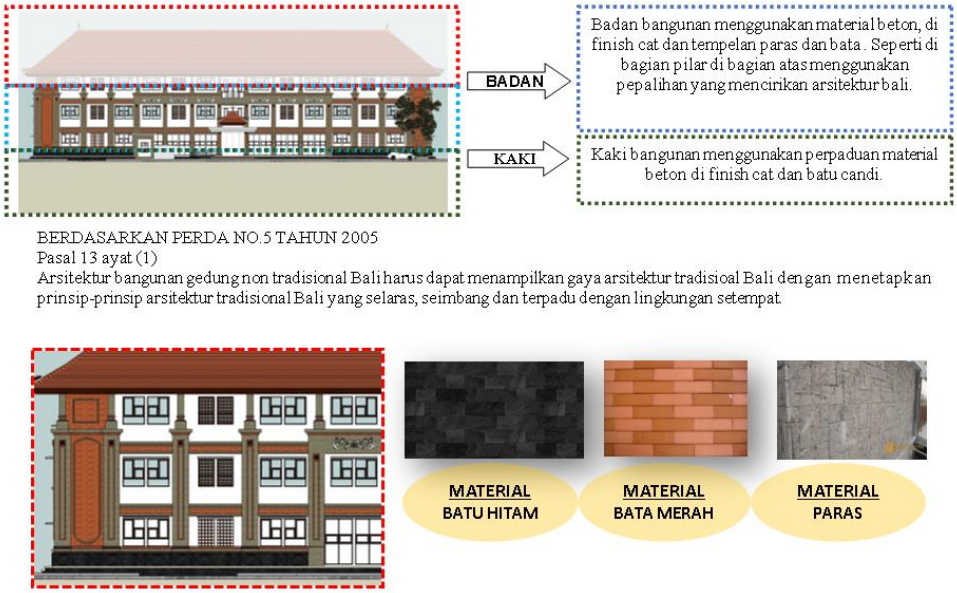
b. Material

Figure 8

Application of Building Materials

Source: Analysis Results (2022)



e) Principles of Utility and Ergonomics

a. Trash Can Placement System

The waste management system uses a disposal system through waste shafts. The waste shaft space is located on the right and left side of the building to make it easier for residents to dispose of rubbish every day and makes it easier for managers to collect rubbish from the waste collection room to be disposed of at the TPS using motorized carts. The placement of waste shafts also ensures that they do not cause environmental pollution, whether it be odor pollution or rubbish that is scattered everywhere. This is also anticipated by the existence of a special space for the waste chute/shaft to buffer the odor and pollution caused by the waste. Several residents placed rubbish bins in the front corridor of their residences. The trash cans used are used cardboard, plastic trash cans with flip covers, plastic waste baskets with plastic bags.

Figure 9

Placement of Trash Cans

Source: Analysis Results (2022)

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b. Entrance Concept

The entrance/entrance concept for this flat with a Balinese architectural perspective consists of 1 entrance where the entry entrance and exit entrance are combined into one. The width of the entrance is 6 meters. The purpose of creating this entrance is to make it easier to get into and out of the site, besides that the smoothness and security of the area can be better monitored. The placement of the angkul-angkul or courtyard door will determine household life, therefore the literature must be followed as implied in astha bumi and astha kosala-kosali, according to their respective positions. It is recommended to have 1 (one) access door to the house or angkul-angkul is not recommended in literature because it will result in waste, infidelity, loss or illness.

Figure 10

Application of the Entrance Concept

Source: Analysis Results (2022)

c. Zoning Concept, Space Function Layout

In this flat there are 2 types of residential units, namely type 36 (Family Type Residential) and type 24 (Studio Type Residential). The division of residential unit zones is based on user activity. Shared facilities in residential buildings are on the 1st floor, such as the living room in the apartment lobby. The concept of flat housing per floor is arranged based on age groups. The 1st floor apartment concept is provided for elderly residents (40 – 50 years and above), can be seen in Figure 11. The 2nd floor apartment concept is provided for adult/family residents aged 30 – 40 years, can be seen in Figure 12. Meanwhile, the concept for 3rd floor flats is provided for young residents aged around 20 – 30 years, which can be seen in Figure 13.

Figure 11

Floor Plan 1

Source: Analysis Results (2022)

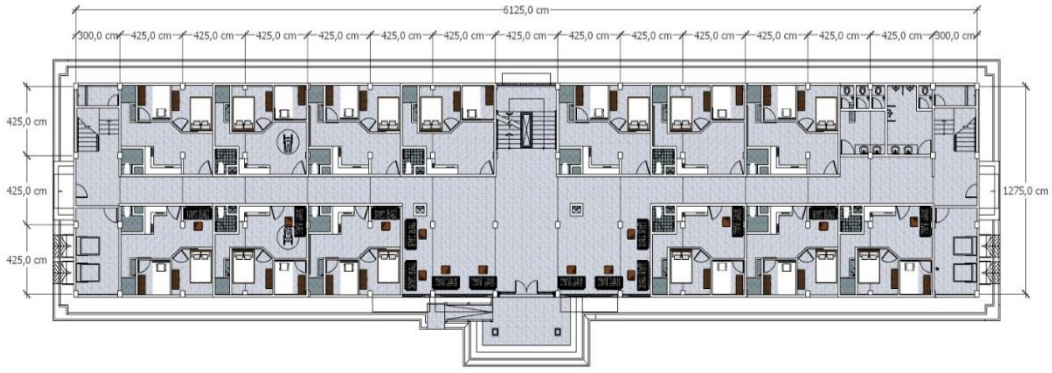

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Figure 12
Floor Plan 2
Source: Analysis Results (2022)

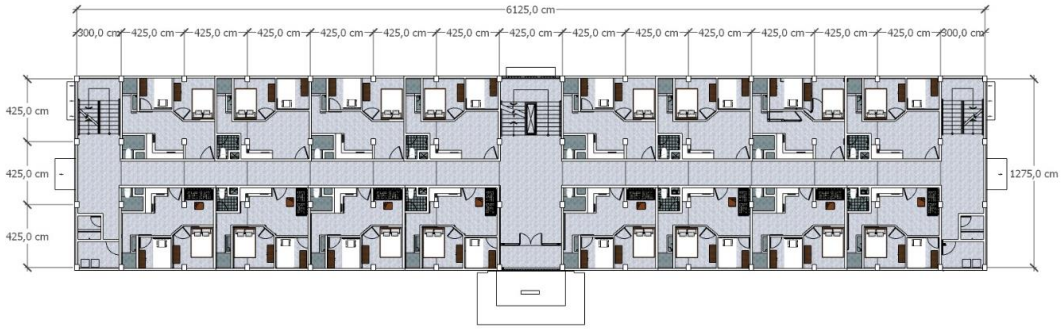

Figure 13
Floor Plan 3
Source: Analysis Results (2022)

In the division of user zones according to building floors, on the 1st floor there are disabled residential units which make it easier for disabled users to access residential units, type 36 residences on the 2nd floor for families with a maximum of 2 children, and type 24 residences on the 3rd floor for young couples or Maximum 2 teenagers, who have a level of activity that is not often at home, due to work or school and are prioritized to live on the 4th floor because they still have more energy than adults in general.

d. Balinese Architectural Flats Exterior Concept

The exterior concept of this flat is adapted to needs, where its position is combined with a living street, because its nature accommodates various activities, while these activities are not always routine, so they must be combined with other functions so that they are still used for activities.

The size of the Holy Place is taken based on an area of 8 x 6 m and the Coral Monument measuring 2 x 2 m which is used as a place of worship for Hindus. The size of the prayer room is taken based on an area of 5 x 5 m and the Wudhu Room is 4 x 5 m taking into consideration that the prayer room activity is only used in the afternoon for mothers' recitation of the Koran, children's recitation activities and prayer on Fridays, but requires a large area and may not be used for other activities. The size of the Multipurpose Hall is 15 x 9 m with its function as a forum for gathering activities, socializing and non-routine community meetings. The size of the Management Room is 4 x 3 m with the idea that the function of the Management Room is a place to take care of the occupants' administration regarding the rental of the apartment, as well as serving new tenants, or other administration and supervision of the implementation of rental regulations in the apartment. The size of the guard post/security post is 2 x 2 m for the apartment

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guard. For more details, see Figure 14 Layout of the Flat, Figure 15 Front View of the Flat, and Figure 16 Side View of the Flat.

Figure 14
Flat Layout
Source: Analysis Results (2022)

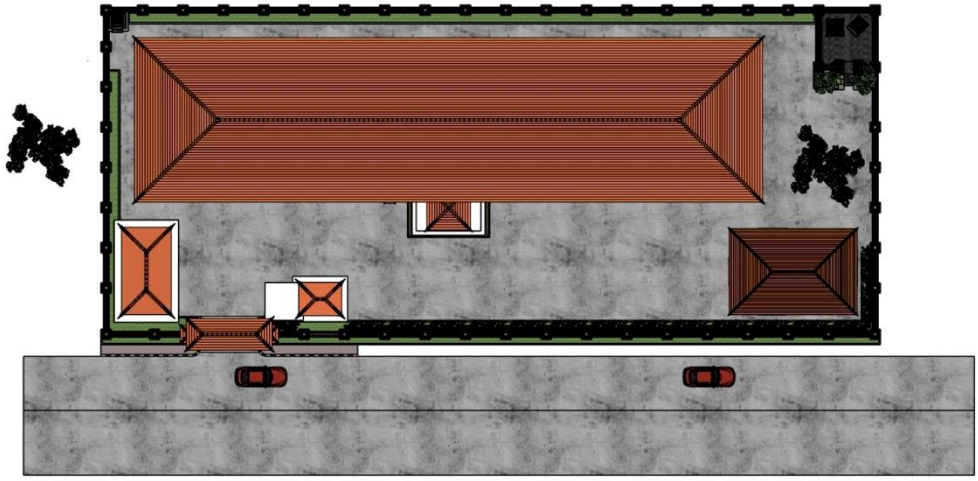
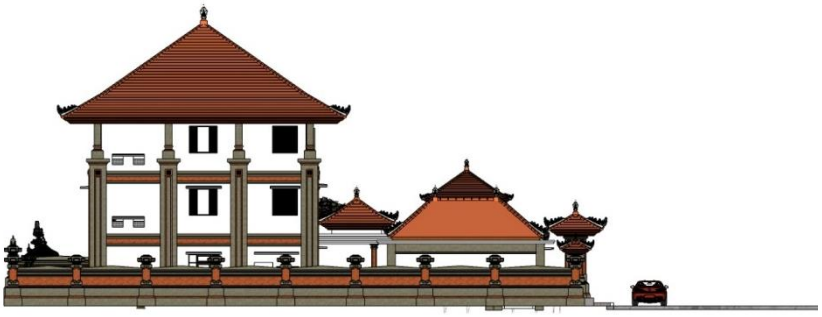


Figure 15
Front view of the flat
Source: Analysis Results (2022)

Figure 16
Side view of the flat
Source: Analysis Results (2022)



f) Residential Block Unit Design

Based on Figure 17, it can be concluded that 49% of respondents have a minimum number of family members of 3 people, so that in designing apartment units a residential model is

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developed that is able to facilitate these needs. According to Minister of Public Works Regulation Number: 60/PRT/1992(Public Works, 1992)The apartment unit must have a standard size that can be accounted for in accordance with the space requirements and provisions of the apartment unit, at least 18 (eighteen) square meters with a front width of at least 3 (three) meters. An apartment unit can consist of 1 (one) main room and other rooms inside and/or outside the main room which form a unit to fulfill daily needs according to its function and use. The space requirements needed in this flat with a Balinese architecture can be concluded as a family type residence with 2 bedrooms and 1 living room. 1 dining room, 1 kitchen, 1 drying balcony and 1 toilet where the total area of the residential unit is 36 m2. Table 4 shows the block plan design model for flat residential units to facilitate the need for family housing. Apart from family type housing, the design model also provides an alternative studio type residence which is intended for a capacity of 1-2 people. The studio residence has a total area of 24 m2 with 1 bedroom, kitchen and bathroom facilities. Table 5 shows the studio type residential design model.

Figure 17
Graph of Frequencies Number of Family Members
Source: Analysis Results (2022)

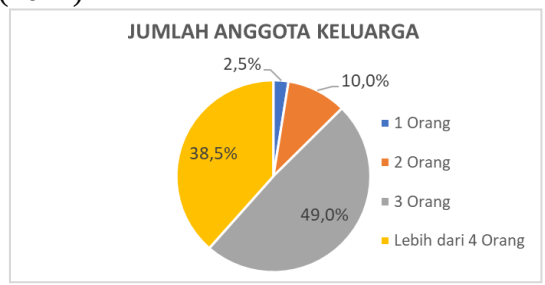
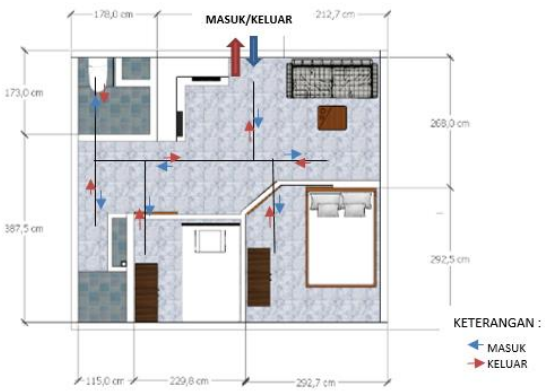


Table 4
Family Type Residential Plan Blocks

Capacity	Equipment and Quantity Requirements		Dimensions		Source
	Facility	Amount	Size	Area	
1 pair	Mattress	1	1.6 x 2 m	3.2 m2	Space studies
1 child		1	1.2 x 2 m	2.4 m2	
	Kitchen	1	0.8 x 2 m	1.6 m2	
	Sofa Sets	1	1 x 2 m	2.2 m2	
	R. Drying	1	1.15 x 0.9m	10.35 m2	
	Bathroom	1	1.6 x 1.7 m	2.72 m2	
	Cupboard	2	0.6 x 1.2 m	1.44 m2	
					Family Type Area = 36 m2



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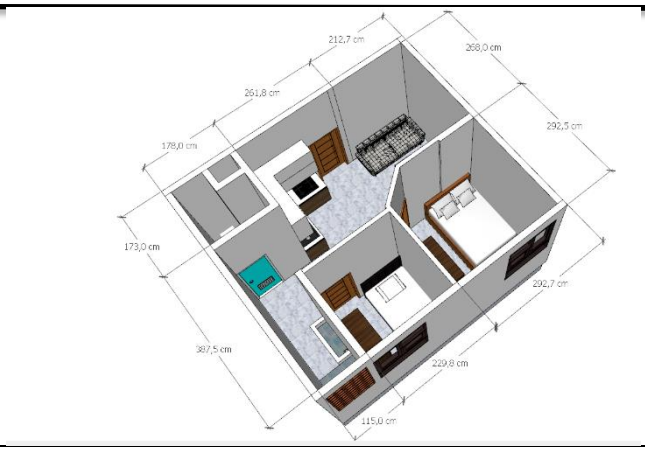
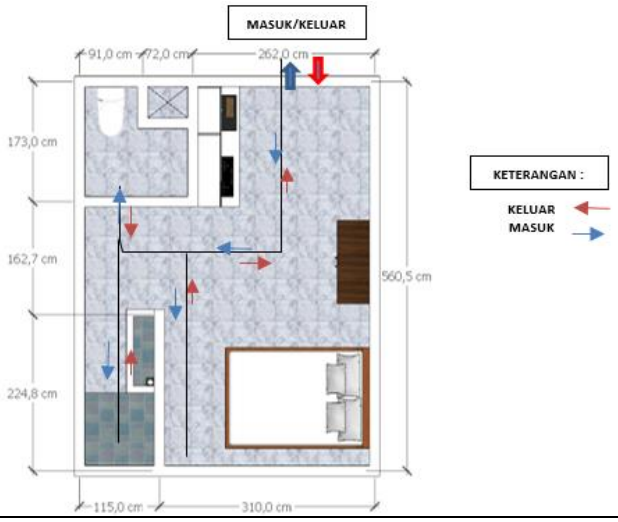


Source: Analysis Results (2022)

Table 5
Studio Type Residential Plan Block

Capacity	Equipment and Quantity Requirements		Dimensions		Source
	Facility	Amount	Size	Area	
1 resident	Mattress	1	1.6 x 2 m	3.2 m2	Space studies
	Kitchen	1	0.8 x 2 m	1.6 m2	
	Bathroom	1	1.6 x 1.7 m	2.72 m2	
	Cupboard	1	0.6 x 1.2 m	0.72 m2	
	R. Drying	1	2.25 x 1.15 m	2.58 m2	
	Study desk	1	0.8 x 1.5 m	1.2 m2	
					Studio Type Area = 24 m2

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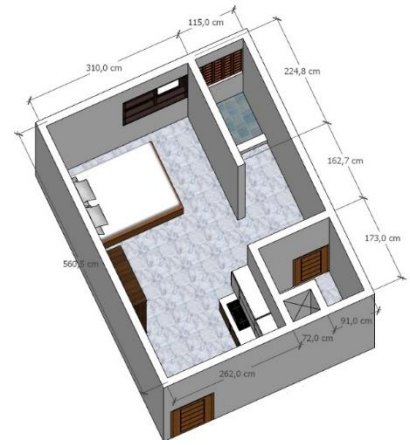

Source: Analysis Results (2022)

4. Conclusion

In this research, the conclusions that can be drawn are the factors that influence the characteristics of flats with a Balinese architectural perspective, including spatial planning principles, building planning principles, utility and facility principles, as well as Balinese architectural principles. Apart from that, planning a flat building design model with a Balinese architectural perspective involves designing the appearance of the building and designing residential block units. The design of the building appearance includes integration and harmony with the environment, yard layout, village layout and city layout based on the Tri Hita Karana principle. The design of residential block units includes two types, namely the family type with 2 bedrooms, 1 living room, 1 dining room, 1 kitchen, 1 drying balcony and 1 toilet, and the studio type with 1 bedroom, kitchen and bathroom. As a suggestion for further research, a broader study could be carried out to develop variations in flat building design models with a Balinese architectural perspective. Apart from that, it is also important to examine the rental costs for flats in accordance with people's income in the city of Denpasar.

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