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Reliability Analysis of State Building in Banjar District

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Abstract. According to the Law of the Republic of Indonesia Number 28 of 2002, it is stated that every building must meet administrative requirements and technical requirements by the function of the building. In addition, according to the Regulation of the Minister of Public Works No. 25 of 2007, it is stated that the building before being used/used must obtain a Function-worthy Certificate (SLF). As of 2022, the condition of state buildings in Banjar Regency has not yet passed the issuance of the Certificate of Feasibility of Function (SLF). This is due to the limited capacity of the Regional Government in the utilization, preservation, and demolition of buildings due to the limited regional budget. The approach used in this research is the quantitative method. The research stage begins by analyzing the level of reliability of state buildings in Banjar Regency (reliable, less reliable, and unreliable) where the components of the assessment consist of architecture, structure, utilities and fire protection, accessibility, and building and environmental planning. Next, analysis state buildings in Banjar Regency which are important are handled first based on a priority scale using the Analytical Hierarchy Process (AHP) method from the results of filling out the questionnaire. The state building is used as a pilot project for the Regional Government so that appropriate recommendations for handling are formulated based on the results of the building reliability assessment. Based on the research, an analysis of the reliability level of the building has been successfully compiled, namely, for the DPRD Secretariat building of 78.34% (less reliable), the Development Planning, Research, and Regional Development Agency building of 78.38% (less reliable), Revenue Service Building Region by 77.61% (less reliable), Public Works Office Building, Spatial Planning and Land by 78.42% (less reliable), The Regional Financial and Asset Management Agency Building is 77.66% (less reliable), and the Health Service Building is 75.31% (less reliable). Based on the results of the analysis using the Analytical Hierarchy Process (AHP) method, it was found that state buildings are essential to be handled first based on a priority scale, namely the Health Office Building by 34%. To meet the reliability of buildings, the Health Office has made recommendations for maintenance, repair, restoration, overhaul/ demolition, and new replacement of building reliability components. Based on the results of the analysis using the Analytical Hierarchy Process (AHP) method, it was found that state buildings are essential to be handled first based on a priority scale, namely the Health Office Building by 34%. To meet the reliability of buildings, the Health Office has made recommendations for maintenance, repair, restoration, overhaul/ demolition, and new replacement of building reliability components. Based on the results of the analysis using the Analytical Hierarchy Process (AHP) method, it was found that state buildings are essential to be handled first based on a priority scale, namely the Health Office Building by 34%. To meet the reliability of buildings, the Health Office has made recommendations for maintenance, repair, restoration, overhaul/ demolition, and new replacement of building reliability components.

Keywords. Reliability of the building, certificate of proper function, Analytical Hierarchy Process.

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1. Introduction

Based on the Law of the Republic of Indonesia Number 28 of 2002 concerning Buildings, Article 3 states that to realize a functional building and by the building structure that is harmonious and in harmony with its environment. Each building must meet administrative requirements and technical requirements by the function of the building (Chapter IV, Article 7 (1)). The technical requirements include building layout requirements and building reliability requirements (Chapter IV, Article 7 (3)) which consist of requirements for safety, health, comfort, and convenience by the function of the building [1].

The definition of reliability according to ISO 8402 is the ability of a building to perform the required functions, under given environmental and operational conditions and for a specified period (Blaskova et al, 2015) [2]. Several data need to be collected in the reliability assessment such as As-Built Drawings, building standards, design documents, and spot measurements (Li et al, 2015) [3]. The reliability method provides various measures of model uncertainty. As from the results of measurements made on real objects, from the results of deterministic simulations carried out based on a physical model using a time series of random input data, and from an approach based on a deterministic function of a random variable (Pietrzyk and Hangentoft, 2007) [4].

The current condition is that there are still many state buildings that have decreased their proper function due to lack of maintenance costs, changes in function, and neglect of routine maintenance and maintenance of state buildings. The capacity of the Regency/City Government is still limited in providing direction for the realization of state buildings that are functional, self-identified, productive, and can guarantee the safety, reliability of buildings, and environmental sustainability, both through licensing and supervision mechanisms. Taking into account the foregoing, as required by the Law of the Republic of Indonesia Number 28 of 2002 and Government Regulation of the Republic of Indonesia No. 16 of 2021, the management and supervision of buildings is the obligation of each region, so it is necessary to follow up in the form of building reliability checks to determine the level of reliability [1].

This level of reliability can be used as a basis for consideration in issuing certificates of building function worthiness by the Regional Government. The benchmark in determining the level of building reliability must refer to the Regulation of the Minister of Public Works Number 29/PRT/M/2006 concerning the guidelines for the technical requirements of buildings, with an assessment of the reliability of aspects of architecture, structure, utility, accessibility, as well as building and environmental planning [5]. With the enactment of the Minister of Public Works No. 03 of 2020 concerning Certification of Functional Eligibility (SLF) for Buildings, a building reliability assessment system is needed [6].

Banjar Regency already has Regional Regulations that regulate buildings, namely Regional Regulation Number 6 of 2018 concerning Amendments to Regional Regulation of Banjar Regency Number 4 of 2012 concerning Buildings, and Banjar Regent Regulation Number 68 of 2017 concerning Implementation of Buildings in Banjar Regency [7]. With this regulation, it should be used as a building control instrument, both preventive and curative. However, there are problems or obstacles to implementing the mandate of the Building Regulation on existing state buildings. So that until 2022, the condition of state buildings in Banjar Regency has not yet been passed in the issuance of the Certificate of Feasibility of Function (SLF). This is due to the limited capacity of the Regional Government to utilize, preserve, and demolition of buildings. One of the main factors, namely the limited regional budget of the Banjar Regency.

The building reliability assessment was carried out by the Banjar Regency Government in 2014. The buildings that were assessed were the Health Office Building, DPRD Office, Regent's Office, Hospital Ratu Zalecha, and Indra Sari Stadium. However, only the Accessibility component was assessed. Several state buildings have experienced degradation of building reliability due to limited funding capacity to carry out maintenance, maintenance, and periodic inspections due to budget constraints. This regional budget limitation is also due to the spread of the Corona Virus Disease 2019 (COVID-19) pandemic from 2019 to 2022, which has implications for budget planning for handling the pandemic, resulting in budget refocusing.

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It is important to assess the level of reliability of buildings in Banjar Regency according to the legislation mentioned above. With the assessment of the level of reliability of state buildings, the condition of state buildings is obtained with an assessment of reliable, less reliable, and unreliable. For each component that is assessed, the level of component reliability will also be out. Due to the limited budget of the Banjar Regency Government, it is necessary to analyze unreliable state buildings which are prioritized for handling. So that there is 1 (one) state-building that will be used as a pilot project to make recommendations for improvement towards a "Reliable" state-building.

The state-building, which will be used as a pilot project, will serve as the basis for making related decisions, making it a top priority in conducting local government budgeting for recommendations for the utilization, preservation, and demolition of the state buildings. Based on this, Banjar Regency needs to assess the reliability of state buildings as a basis for consideration in issuing Certificates of Functional Worth (SLF) for state buildings and provide and ensure safety, comfort, and security for users and visitors of state buildings to make productivity work will increase.

2. Research Methods

2.1. Primary Data Collection

The primary data needed is the factor of the implementation of the construction safety management system obtained from the survey method using observation and questionnaires. Observations this study aims to obtain technical data by observing directly in the field to obtain physical data on the existing condition of state buildings in Banjar Regency. Data retrieval is done by recording techniques, photo documentation, and report data related to building reliability test reports. The questionnaire was used to obtain an assessment of the reliability of state buildings in Banjar Regency based on the opinions of experts or building practitioners who were selected by purposive random sampling and involved a minimum of 30 (thirty) respondents.

2.2. Secondary Data Collection

The main sources of secondary data are laws and regulations related to buildings, such as Law Number 28 of 2002 concerning Buildings, Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 22/PRT/M/2018 concerning the Construction of State Buildings, policy documents such as the Plan Building and Environmental Management (RTBL), Perda/Perbup and others related to this research. The literature review comes from this secondary data collection. In addition, previous research data, Shop Drawings, As Build Drawings, Backup development data, Budget Plans (if any), and Indonesian National Standards (SNI) as well as regulations relating to building reliability assessments.

2.3. Analysis and Discussion

In analyzing quantitative data in this study, there are stages carried out, namely as follows:

1. Analyzing state buildings in Banjar Regency with non-simple building classifications with the number of floors above 2 (two) floors.
2. This building reliability assessment guideline is based on data collected and processed using a format prepared by the Director-General of Building and Environmental Management (PBL) of the Ministry of Public Works and Public Housing. The Excel-based software contains five main aspects that are assessed, namely Architecture, Structure, Utility and Fire Protection, Accessibility, and Building Planning and Environment.
3. The survey data is visually entered into the building reliability assessment form in the form of Excel-based software. The survey was conducted by researchers and assisted by a team of experts who are competent in assessing the reliability of buildings.
4. The building reliability assessment form is filled in according to the weight of each component and sub-component based on the five main building components, then it is applied to Microsoft Excel which helps the assessment quickly and provides the results of the overall building reliability assessment. The assessment that has been compiled to produce a final assessment of the level of reliability of the building from the condition of the 6 (six) state buildings. From the building reliability assessment, the outputs are (a) reliable, (b) less reliable, and (c) unreliable.

5. From the results of the reliability assessment of the state building, the results state that the building is unreliable and unreliable, then the results of each state building will be entered into the questionnaire. To determine the building of a state building, it is necessary to handle it
6. The results of filling out the questionnaire from the opinions of experts or building practitioners will be processed using the Analytical Hierarchy Process (AHP) method by performing pairwise comparison matrices and weighting criteria. The results of the analysis using the Analytical Hierarchy Process (AHP) method will get which state buildings are essential to be handled first based on a priority scale.
7. The criteria used as a condition for evaluating the Analytical Hierarchy Process (AHP) method are only criteria for 5 (five) building reliability components and an alternative in the form of 6 (six) state buildings with a non-simple classification. From the results of the AHP, state buildings that are the priority for handling will be formulated appropriate recommendations based on the results of the reliability of state buildings.
8. These recommendations can be followed up by the district government. Banjar in handling the utilization, preservation, and demolition of the state building in the first year was due to the limited budget of the District Government. Banjar. With the handling of 1 (one) state-building, this will be used as a pilot project for the local government to make the building "Reliable" and the next stage can propose the issuance of a Certificate of Functionality (SLF) for state buildings.
9. The results of the overall assessment of the reliability of the buildings under study will be submitted to the task-holding officials who handle buildings in the District. Banjar to be used as material for the implementation of the handling of state buildings so that the building will eventually become “Reliable”, thus supporting the implementation of the SLF (Certificate of Functional Eligibility) for state buildings by the Regional Government.

3. Results and Discussion

3.1. Research Object Data

The object of research this building is located in Banjar Regency, which is a state building with a non-simple building classification with the number of floors above 3 (three) floors being identified as 6 (six) buildings. The buildings are as follows:

1. DPRD Secretariat Building
2. Regional Development Planning, Research and Development Agency Building
3. Regional Revenue Service Building
4. Public Works, Spatial Planning, and Land Office Building
5. Regional Financial and Asset Management Agency Building
6. Health Office Building

3.2. Level of Reliability of State Buildings in Kab. Banjar

Data retrieval through visual observation and measurement of the magnitude of the building reliability component. The observation figures are entered in a format prepared by the Director-General of Building and Environmental Management (PBL) of the Ministry of Public Works and Public Housing. The Excel-based software contains five main aspects of building reliability that is assessed, namely Architecture, Structure, Utilities and Fire Protection, Accessibility, and Building Planning and Environment. The results of the interpretation of building reliability checks on buildings inspected by a team of experts can be seen in the following explanation.

1. District DPRD Secretariat Building. Banjar

Based on the results of the weighting of components that have been assessed on interpretation, the reliability value of the Regency DPRD Secretariat building. Banjar is included in the LESS ANDAL category, with a building reliability rating of 78.34%. The level of damage/lack of all components from the assessment results is dominated by the utility component, fire protection, and accessibility components.

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Table 3.1. Recap of the Reliability Assessment Results of the DPRD Secretariat Building Kab. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	99.60	75% - <95%	-	<75%	-	10	9.96
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.98	85% - <95%	-	<85%	-	30	29.99
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	62.10	50	31.05
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	46.65	5	2.33
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
				Total number				100	78.34 (Less Reliable)

2. Regional Development Planning, Research and Development Agency Building Kab. Banjar

Based on the results of the weighting of the components that have been assessed on the interpretation, the reliability value of the building for the Development Planning, Research and Development Agency of Kab. Banjar is included in the LESS ANDAL category, with a building reliability rating of 78.38%. The level of damage/lack of all components from the assessment results is dominated by the utility component, fire protection. and accessibility components.

Table 3.2. Results of Building Reliability Assessment of the Regional Development Planning, Research and Development Agency of Kab. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	99.82	75% - <95%	-	<75%	-	10	9.98
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.49	85% - <95%	-	<85%	-	30	29.85
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	62.10	50	31.05
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	50.05	5	2.50
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
				Total number				100	78.38 (Less Reliable)

3. District Revenue Office Building. Banjar

Based on the results of the weighting of the components that have been assessed on the interpretation, the reliability value of the building of the District Revenue Service building. Banjar is included in the LESS ANDAL category, with a weighted value of building reliability with an assessment form of 77.61%. The level of damage/lack of all components from the assessment results is dominated by the utility component, fire protection. and accessibility components.

Table 3.3. Results of the Reliability Assessment of the Regional Revenue Service Building for the District. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	98.22	75% - <95%	-	<75%	-	10	9.82
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.97	85% - <95%	-	<85%	-	30	29.99

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No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	61.30	50	30.65
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	42.85	5	2.14
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
		Total number						100	77.61 (Less Reliable)

4. Office of Public Works, Spatial Planning and Land Affairs Building Kab. Banjar

Based on the results of the weighting of components that have been assessed on interpretation, the reliability value of the building of the Office of Public Works, Spatial Planning and Land Affairs Kab. Banjar is included in the LESS ANDAL category, with a building reliability weight value of 78.42%. The level of damage/lack of all components from the assessment results is dominated by the utility component, fire protection. and accessibility components.

Table 3.4. Results of Building Reliability Assessment of the Office of Public Works, Spatial Planning and Land Affairs Kab. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	99.17	75% - <95%	-	<75%	-	10	9.92
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.99	85% - <95%	-	<85%	-	30	30.00
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	61.30	50	30.65
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	57.05	5	2.85
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
		Total number						100	78.42 (Less Reliable)

5. District Financial and Asset Management Agency Building. Banjar

Based on the results of the weighting of the components that have been assessed on interpretation, the reliability value of the building for the Regional Financial and Asset Management District. Banjar is included in the LESS ANDAL category, with a building reliability rating of 77.66%. The level of damage/lack of all components from the assessment results is dominated by the utility component, fire protection. and accessibility components.

Table 3.5. Results of the Building Reliability Assessment of the Regional Financial and Asset Management Agency of the Regency. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	98.82	75% - <95%	-	<75%	-	10	9.88
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.97	85% - <95%	-	<85%	-	30	29.99
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	61.30	50	30.65
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	42.65	5	2.13
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
		Total number						100	77.66 (Less Reliable)

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6. District Health Office Building. Banjar

Based on the results of the weighting of components that have been assessed on the interpretation, the reliability value of the building of the District Health Office. Banjar is included in the LESS ANDAL category, with a building reliability weight value using an assessment form of 75.31%. The level of damage/lack of all components from the assessment results is dominated by architectural components, utilities, fire protection. and accessibility components.

Table 3.6. Results of the Building Reliability Assessment of the District Health Office. Banjar

No.	Rated aspect	Rating Category						Rating Weight (%)	Total Reliability Value (%)
		reliable	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
(1)	(2)	(3)		(4)		(5)		(6)	(7)
1	Architecture	95% - 100%	-	75% - <95%	85.41	<75%	-	10	8.54
2	Concrete Frame Structure and Masonry Wall	95% - 1000%	99.25	85% - <95%	-	<85%	-	30	29.99
3	Utilities & Fire Protection	100%	-	95% - 100%	-	<95%	59.73	50	30.65
4	Accessibility	95% - 100%	-	75% - <95%	-	<75%	42.60	5	2.13
5	Building & Environment	95% - 100%	100.00	75% - <95%	-	<75%	-	5	5.00
				Total number				100	75.31 (Less Reliable)

Based on the above assessment, the Recapitulation of the Details of the Assessment of 6 (six) State Buildings, and the overall building component assessment category with the limits of the assessment category are Reliable (≥95% - 100%), Less Reliable (≥75% - 95%), No Reliable (<75) can be seen in the table below.

Table 3.7. Recapitulation of Reliability Level Category Per Component of State Building in Kab. Banjar

No	Component	Not a Simple State Building in Banjar Regency											
		DPRD Secretariat Building		Regional Development Planning, Research and Development Agency Building		Regional Revenue Service Building		Public Works, Spatial Planning and Land Office Building		Regional Financial and Asset Management Agency Building		Health Office Building	
		Score	Category	Score	Category	Score	Category	Score	Category	Score	Category	Score	Category
1.	**Architecture**	99.60	reliable	99.82	reliable	98.22	reliable	99.17	reliable	98.82	reliable	85.41	Less reliable
2.	**Structure**	99.98	reliable	99.49	reliable	99.97	reliable	99.99	reliable	99.97	reliable	99.25	reliable
3.	**Utilities**	62.10	Unreliable	62.10	Unreliable	61.30	Unreliable	61.30	Unreliable	61.30	Unreliable	59.73	Unreliable
4.	**Accessibility**	46.65	Unreliable	50.05	Unreliable	42.85	Unreliable	57.05	Unreliable	42.65	Unreliable	42.60	Unreliable
5.	**Building and Environment**	100	reliable	100	reliable	100	reliable	100	reliable	100	reliable	100	reliable

Table 3.8. Recapitulation of Total Weight and Category of State Building Reliability Level in Kab. Banjar

No	Component	Rating Weight (%)	Not a Simple State Building in Banjar Regency											
			DPRD Secretariat Building		Regional Development Planning, Research and Development Agency Building		Regional Revenue Service Building		Public Works, Spatial Planning and Land Office Building		Regional Financial and Asset Management Agency Building		Health Office Building	
			Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight
1.	**Architecture**	10	99.60	9.96	99.82	9.98	98.22	9.82	99.17	9.92	98.82	9.88	85.41	8.54
2.	**Structure**	30	99.98	29.99	99.49	29.85	99.97	29.99	99.99	30.00	99.97	29.99	99.25	29.99
3.	**Utilities**	50	62.10	31.05	62.10	31.05	61.30	30.65	61.30	30.65	61.30	30.65	59.73	30.65
4.	**Accessibility**	5	46.65	2.33	50.05	2.33	42.85	2.14	57.05	2.85	42.65	2.13	42.60	2.13
5.	**Building and Environment**	5	100.00	5.00	100	5.00	100	5.00	100	5.00	100	5.00	100	5.00

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No	Component	Rating Weight (%)	Not a Simple State Building in Banjar Regency											
			DPRD Secretariat Building		Regional Development Planning, Research and Development Agency Building		Regional Revenue Service Building		Public Works, Spatial Planning and Land Office Building		Regional Financial and Asset Management Agency Building		Health Office Building	
			Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight	Value-Reliability	Reliability Weight
Total Building Reliability Weights				**78.34**		**78.38**		**77.61**		**78.42**		**77.66**		**75.31**
Building Reliability Level Category				**Less reliable**		**Less reliable**		**Less reliable**		**Less reliable**		**Less reliable**		**Less reliable**

3.3. *Banjar Regency State Buildings that are Important for Handling First Based on Priority Scale with the Analytical Hierarchy Process (AHP) Method*

The Analytical Hierarchy Process (AHP) method can be formed from criteria and alternatives that are hierarchical in the selection of state buildings with reliability recommendations derived from objectives, criteria, and alternatives. The algorithm for solving the Analytical Hierarchy Process (AHP) method is to first define the criteria that will be used as a benchmark for solving problems and determine the level of importance of each criterion, calculate the comparison matrix value of each criterion based on the table of importance values, calculate the value of the weight of the criteria (Wi), calculates Vector Eigen (Xi), calculates Eigen Maximum (λ max) and calculates Consistency Index (CI) value.

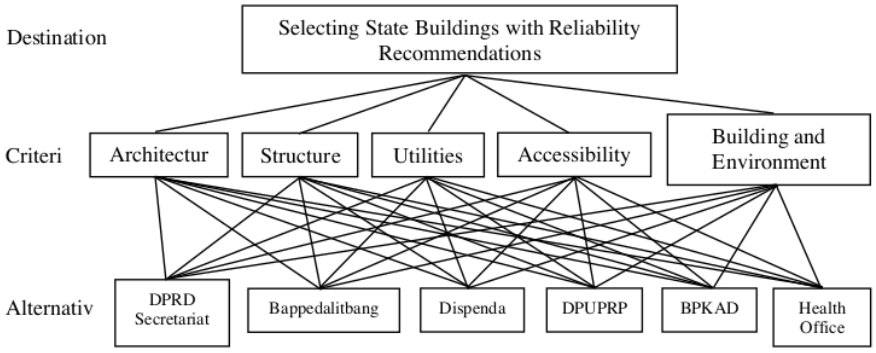

Figure 3.1. Hierarchical Structure for Selection of State Buildings for which Reliability Recommendations will be made using the Analythical Hierarchy Process (AHP) Method

1. Determination of Weights Between Main Criteria

Table 3.9 Scale of Interest of State Building Components

No.	Component	Interest Scale																	Component
		9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
1	Architecture																		Structure
2	Architecture																		Utilities
3	Architecture																		Accessibility
4	Architecture																		Building and Environment
5	Structure																		Utilities
6	Structure																		Accessibility
7	Structure																		Building and Environment
8	Utilities																		Accessibility
9	Utilities																		Building and Environment
10	Accessibility																		Building and Environment

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The criteria weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The following is the value of the criterion weight (Wi) from the product of the elements in one row and the root of the power of n.

Table 3.10. Criterion Weight Value (Wi) from Multiplying the Elements in One Row and the Root Power of n

Criteria	Architecture	Structure	Utilities	Accessibility	Building and Environment
Architecture	1.00	0.46	0.40	0.89	0.96
Structure	2.18	1.00	1.89	2.32	1.56
Utilities	2.47	0.53	1.00	2.13	2.06
Accessibility	1.12	0.43	0.47	1.00	1.83
Building and Environment	1.04	0.64	0.48	0.55	1.00
TOTAL Wi	**7.75**	**3.06**	**4.25**	**6.88**	**7.41**

Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as the weights of the main criteria elements and the normalization of the matrix between the main criteria can be seen in the table and figure below.

Table 3.11. Vector Eigen Values as Weights of the Elements of the Main Criteria

Criteria	Architecture	Structure	Utilities	Accessibility	Building and Environment	Average/Weight Main Criteria
Architecture	0.13	0.15	0.10	0.13	0.13	**0.13**
Structure	0.28	0.33	0.45	0.34	0.21	**0.32**
Utilities	0.32	0.17	0.24	0.31	0.28	**0.26**
Accessibility	0.14	0.14	0.11	0.15	0.25	**0.16**
Building and Environment	0.13	0.21	0.11	0.08	0.13	**0.13**
priority vector or eigenvector						**1.00**

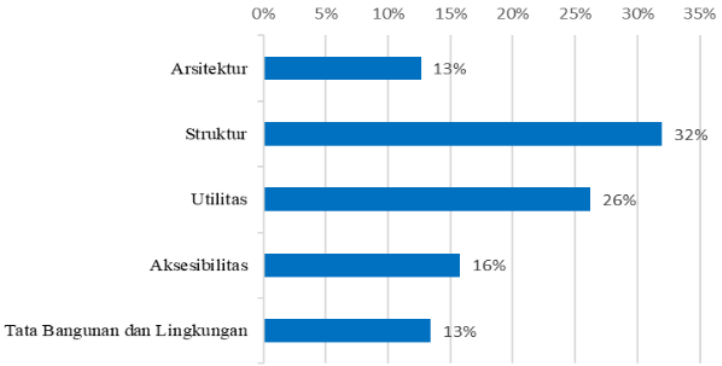

Figure 3.2 Matrix Normalization Between Main Criteria

After getting the criteria weight (Vector Priority) for each criterion, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 5.146. Get the Consistency Index (CI) = 0.036. Calculating the Consistency Ratio (CR) value, the result is 0.033 (with consistent results of 0.1).

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2. Weight Between Alternatives Based on Main Criteria

Furthermore, the calculation of the weighting of the Analytical Hierarchy Process (AHP) method with pairwise comparisons is to scale the importance of alternative state buildings from the main criteria as seen in the table below.

Table 3.12 State Building Interest Scale for Repair/Maintenance Recommendations of Main Components

No.	Building Name	Interest Scale																	Building Name
		9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
1	DPRD Secretariat																		Bappedalitbang
2	DPRD Secretariat																		Dispenda
3	DPRD Secretariat																		DPUPRP
4	DPRD Secretariat																		BPKAD
5	DPRD Secretariat																		Health Office
6	Bappedalitbang																		Dispenda
7	Bappedalitbang																		DPUPRP
8	Bappedalitbang																		BPKAD
9	Bappedalitbang																		Health Office
10	Dispenda																		DPUPRP
11	Dispenda																		BPKAD
12	Dispenda																		Health Office
13	DPUPRP																		BPKAD
14	DPUPRP																		Health Office
15	BPKAD																		Health Office

a. Determination of Weights Between Alternatives Based on Architectural Criteria

The alternative weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The value of the criterion weight (Wi) is the product of the multiplication of the elements in one row and is rooted in the power of n.

Table 3.13. Alternative Weight Values Based on Architectural Criteria (Wi) from the Product of Multiplying Elements in One Row and Root Power of n

Alternative	DPRD Secretariat	Bappedalitbang	Dispenda	DPUPRP	BPKAD	Health Office
DPRD Secretariat	1.00	2.37	0.42	0.79	0.41	0.21
Bappedalitbang	0.42	1.00	0.32	0.66	0.36	0.21
Dispenda	2.36	3.10	1.00	4.17	3.43	0.24
DPUPRP	1.27	1.51	0.24	1.00	0.30	0.18
BPKAD	2.45	2.80	0.29	3.37	1.00	0.20
Health Office	4.51	4.82	4.18	5.47	5.03	1.00
TOTALWi	**12.01**	**15.60**	**6.46**	**15.46**	**10.52**	**2.05**

Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as alternative element weights based on architectural criteria and matrix normalization between alternatives based on architectural criteria can be seen in the table and figure below.

Table 3.14 Eigen Vector Values as Alternative Element Weights Based on Architectural Criteria

Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Average/Weight of Alternative Elements Based on Architectural Criteria
DPRD Secretariat	0.08	0.15	0.07	0.05	0.04	0.11	**0.08**

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Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Average/Weight of Alternative Elements Based on Architectural Criteria
Bappedalitbang	0.04	0.06	0.05	0.04	0.03	0.10	**0.05**
Dispenda	0.20	0.20	0.15	0.27	0.33	0.12	**0.21**
DPUPRP	0.11	0.10	0.04	0.06	0.03	0.09	**0.07**
BPKAD	0.20	0.18	0.05	0.22	0.10	0.10	**0.14**
Health Office	0.38	0.31	0.65	0.35	0.48	0.49	**0.44**
priority vector or eigenvector							**1.00**

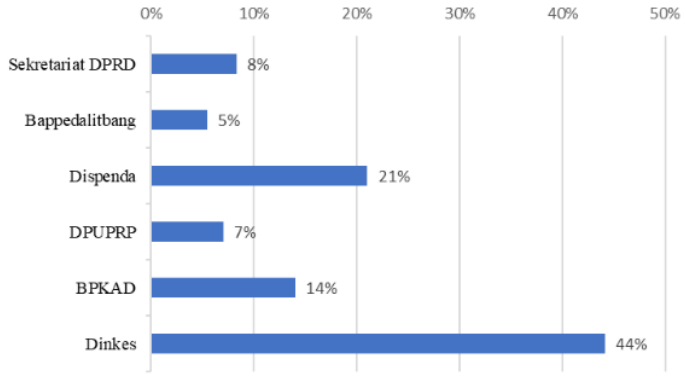

Figure 3.3. Matrix Normalization Between Alternatives Based on Architectural Criteria

After getting the criteria weight (Vector Priority) for each alternative, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 6.458. Get the Consistency Index (CI) = 0.09. Calculating the Consistency Ratio (CR) value, the result is 0.073 (with consistent results of 0.1).

b. Determination of Weights Between Alternatives Based on Structural Criteria

The alternative weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The following is the value of the criterion weight (Wi) from the product of the elements in one row and the root to the power of n, which can be seen in Table IV.52.

Table 3.15. Alternative Weight Values Based on Structural Criteria (Wi) from the Product of Multiplying Elements in One Row and Root Power of n

Alternative	DPRD Secretariat	Bappedalitbang	Dispenda	DPUPRP	BPKAD	Health Office
DPRD Secretariat	1.00	0.81	0.83	1.10	0.84	0.36
Bappedalitbang	1.24	1.00	1.21	1.49	1.15	0.40
Dispenda	1.21	0.82	1.00	1.52	1.11	0.39
DPUPRP	0.90	0.67	0.66	1.00	0.88	0.35
BPKAD	1.19	0.87	0.90	1.14	1.00	0.40
Health Office	2.79	2.49	2.55	2.90	2.50	1.00
TOTALWi	**8.32**	**6.66**	**7.15**	**9.15**	**7.48**	**2.90**

Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as

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alternative element weights based on structural criteria and matrix normalization between alternatives based on structural criteria can be seen in the table and figure below.

Table 3.16. Eigen Vector Values as Alternative Element Weights Based on Structure Criteria

Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Average/Weight of Alternative Elements Based on Structural Criteria
DPRD Secretariat	0.12	0.12	0.12	0.12	0.11	0.12	**0.12**
Bappedalitbang	0.15	0.15	0.17	0.16	0.15	0.14	**0.15**
Dispenda	0.14	0.12	0.14	0.17	0.15	0.14	**0.14**
DPUPRP	0.11	0.10	0.09	0.11	0.12	0.02	**0.11**
BPKAD	0.14	0.13	0.13	0.12	0.13	0.14	**0.13**
Health Office	0.33	0.37	0.36	0.32	0.33	0.35	**0.34**
priority vector or eigenvector							**1.00**

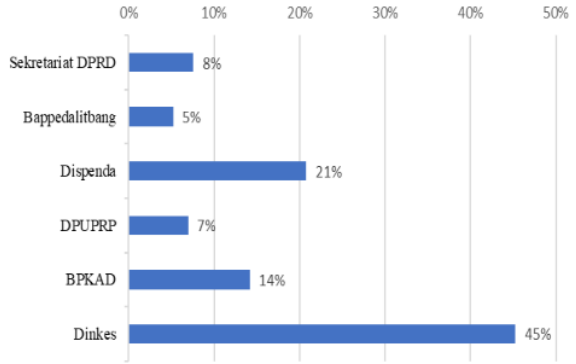

Figure 3.4 Normalization of Matrix Between Alternatives Based on Structure Criteria

After getting the criteria weight (Vector Priority) for each alternative, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 6.012. Get the Consistency Index (CI) = 0.002. Calculating the Consistency Ratio (CR) value, the result is 0.002 (with consistent results of 0.1).

c. Determination of Weights Between Alternatives Based on Utility Criteria

The alternative weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The value of the criterion weight (Wi) is the product of the multiplication of the elements in one row and is rooted in the power of n.

Table 3.17. Alternative Weight Values Based on Utility Criteria (*Wi*) of the product of the elements in a row and the root to the power of n

Alternative	DPRD Secretariat	Bappedalitbang	Dispenda	DPUPRP	BPKAD	Health Office
DPRD Secretariat	1.00	1.08	0.65	0.66	0.60	0.31
Bappedalitbang	0.92	1.00	0.57	0.72	0.54	0.34
Dispenda	1.55	1.75	1.00	1.31	1.18	0.36
DPUPRP	1.51	1.39	0.76	1.00	0.84	0.32
BPKAD	1.68	1.87	0.85	1.19	1.00	0.35
Health Office	3.18	2.96	2.75	3.11	2.89	1.00
TOTALWi	**9.84**	**10.05**	**6.58**	**7.99**	**7.04**	**2.68**

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Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as alternative element weights based on utility criteria and matrix normalization between alternatives based on utility criteria can be seen in the table and figure below.

Table 3.18. Vector Eigen Values as Alternative Element Weights Based on Utility Criteria

Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Alternate Elemental Average/Weight Based on Utility Criteria
DPRD Secretariat	0.10	0.11	0.10	0.08	0.08	0.12	**0.10**
Bappedalitbang	0.09	0.10	0.09	0.09	0.08	0.13	**0.10**
Dispenda	0.16	0.17	0.15	0.16	0.17	0.14	**0.16**
DPUPRP	0.15	0.14	0.12	0.13	0.12	0.12	**0.13**
BPKAD	0.17	0.19	0.13	0.15	0.14	0.13	**0.15**
Health Office	0.32	0.29	0.42	0.39	0.41	0.37	**0.37**
priority vector or eigenvector							**1.00**

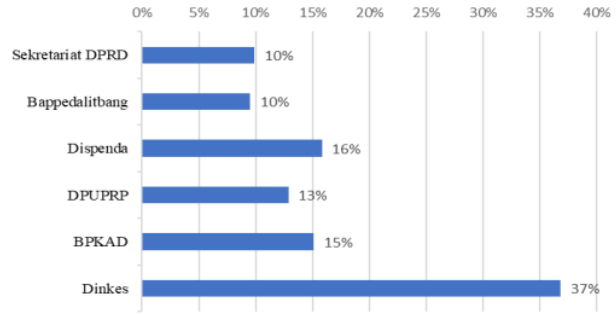

Figure 3.5. Matrix Normalization Between Alternatives Based on Utility Criteria

After getting the criteria weight (Vector Priority) for each alternative, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 6.04. Get the Consistency Index (CI) = 0.008. Calculating the Consistency Ratio (CR) value, the result is 0.006 (with consistent results of 0.1).

d. Determination of Weights Between Alternatives Based on Accessibility Criteria

The alternative weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The value of the criterion weight (Wi) is the product of the multiplication of the elements in one row and is rooted in the power of n.

Table 3.19. Alternative Weight Values Based on Accessibility Criteria (Wi) from Multiplying Elements in One Row and Root Power of n

Alternative	DPRD Secretariat	Bappedalitbang	Dispenda	DPUPRP	BPKAD	Health Office
DPRD Secretariat	1.00	3.21	0.38	2.76	0.42	0.30
Bappedalitbang	0.32	1.00	0.35	2.05	0.38	0.26
Dispenda	2.62	2.85	1.00	2.99	0.96	0.38
DPUPRP	0.36	0.49	0.33	1.00	0.36	0.26
BPKAD	2.40	2.66	1.04	2.76	1.00	0.51
Health Office	3.37	3.77	2.63	3.82	1.96	1.00
TOTALWi	**10.71**	**13.88**	**5.74**	**15.37**	**5.08**	**2.71**

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Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as alternative element weights based on accessibility criteria and matrix normalization between alternatives based on accessibility criteria can be seen in the table and figure below.

Table 3.20 Eigen Vector Values as Alternative Element Weights Based on Accessibility Criteria

Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Average/Weight of Alternative Elements Based on Accessibility Criteria
DPRD Secretariat	0.10	0.22	0.07	0.18	0.08	0.11	**0.13**
Bappedalitbang	0.03	0.07	0.06	0.13	0.07	0.10	**0.08**
Dispenda	0.26	0.20	0.17	0.19	0.19	0.14	**0.19**
DPUPRP	0.04	0.04	0.05	0.07	0.07	0.10	**0.06**
BPKAD	0.24	0.19	0.18	0.18	0.20	0.19	**0.20**
Health Office	0.33	0.27	0.46	0.25	0.39	0.37	**0.34**
priority vector or eigenvector							**1.00**

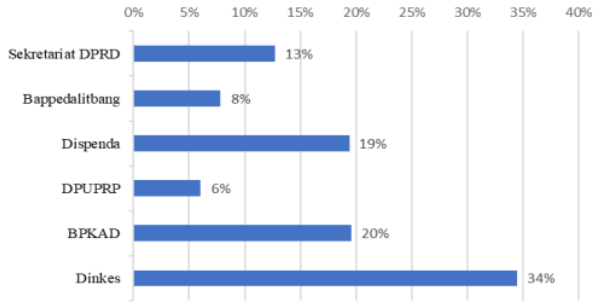

Figure 3.6. Matrix Normalization Between Alternatives Based on Accessibility Criteria

After getting the criteria weight (Vector Priority) for each alternative, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 6.281. Get the Consistency Index (CI) = 0.056. Calculating the Consistency Ratio (CR) value, the result is 0.045 (with consistent results of 0.1).

e. Determination of Weights Between Alternatives Based on Building and Environmental Criteria

The alternative weighting data was obtained from the assessment of 30 respondents who had filled out the questionnaire. The results of the questionnaire will be evaluated which produces a comparison matrix table. The value of the criterion weight (Wi) is the product of the multiplication of the elements in one row and has the square root of n.

Table 3.21. Alternative Weight Values Based on Building and Environmental Criteria (Wi) from the Product of Multiplying the Elements in One Row and the Root Power of n

Alternative	DPRD Secretariat	Bappedalitbang	Dispenda	DPUPRP	BPKAD	Health Office
DPRD Secretariat	1.00	1.13	1.05	1.13	1.07	0.87
Bappedalitbang	0.89	1.00	1.02	1.10	1.02	0.92
Dispenda	0.95	0.98	1.00	1.23	1.15	0.95
DPUPRP	0.89	0.91	0.81	1.00	1.04	0.87
BPKAD	0.94	0.98	0.87	0.96	1.00	0.88
Health Office	1.15	1.09	1.05	1.15	1.14	1.00
TOTALWi	**5.81**	**6.09**	**5.80**	**6.57**	**6.41**	**5.49**

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Then calculate the priority vector or eigenvector. The results obtained are in the form of eigenvectors as element weights using the formula $Xi = \frac{Wi}{\Sigma Wi}$. The results of the eigenvector values as alternative element weights based on building and environmental planning criteria, and matrix normalization between alternatives based on building and environmental planning criteria be seen in the table and figure below.

Table 3.22 Eigen Vector Values as Alternative Element Weights Based on Building and Environmental Criteria

Alternative	DPRD Secretariat	Bappeda-R&D	Dispenda	DPUPRP	BPKAD	Health Office	Average/Weight of Alternative Elements Based on Building and Environmental Criteria
DPRD Secretariat	0.17	0.19	0.18	0.17	0.17	0.16	**0.17**
Bappedalitbang	0.15	0.16	0.18	0.17	0.16	0.17	**0.16**
Dispenda	0.16	0.16	0.17	0.19	0.18	0.17	**0.17**
DPUPRP	0.15	0.15	0.14	0.15	0.16	0.16	**0.15**
BPKAD	0.16	0.16	0.15	0.15	0.16	0.16	**0.16**
Health Office	0.20	0.18	0.18	0.17	0.18	0.18	**0.18**
priority vector or eigenvector							**1.00**

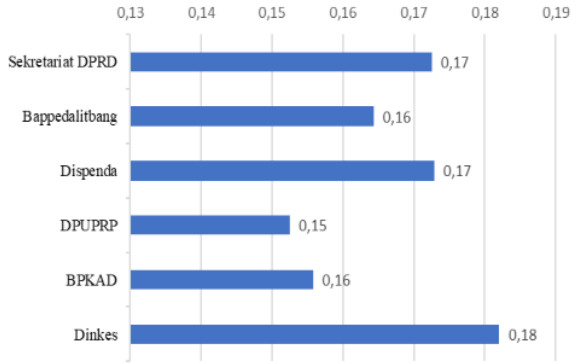

Figure 3.7. Matrix Normalization Between Alternatives Based on Building and Environmental Criteria

After getting the criteria weight (Vector Priority) for each alternative, then a data consistency check will be carried out to calculate the Consistency ratio (CR), it takes max (Eigen Maximum) and Consistency Index (CI). Determining the Maximum Eigenvalue (λmax), the result is max = 6.046. Get the Consistency Index (CI) = 0.009. Calculating the Consistency Ratio (CR) value, the result is 0.007 (with consistent results of 0.1).

Based on the results of the above calculation, the Banjar Regency state building which is important is handled first based on the priority scale with the Analytical Hierarchy Process (AHP) Method, and the results of the Eigen Vector for each alternative are multiplied by the Eigen Vector Main Criteria can be seen in the table below. The percentage value ranking of state buildings that will be handled in the form of reliability recommendations can be seen in the image below.

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Table 3.23. Comparison of Eigen Vector Values for Each Alternative and Eigen Vector Main Criteria

	***Vector Eigen*Every Alternative**				
	Architecture	**Structure**	**Utilities**	**Accessibility**	**Building & Environment**
DPRD Secretariat	0.08	0.12	0.10	0.13	0.17
Bappedalitbang	0.05	0.15	0.10	0.08	0.16
Dispenda	0.21	0.14	0.16	0.19	0.17
DPUPRP	0.07	0.11	0.13	0.06	0.15
BPKAD	0.14	0.13	0.15	0.20	0.16
Health Office	0.44	0.34	0.37	0.34	0.18
***Vector Eigen*Main Criteria**	**0.13**	**0.32**	**0.26**	**0.16**	**0.13**

Table 3.24 The Result of Multiplying the Eigen Vector Value of Each Alternative with the Eigen Vector Value of the Main Criteria

	Architecture	**Structure**	**Utilities**	**Accessibility**	**Building & Environment**	**Total Weight**	**Ranking**
DPRD Secretariat	0.011	0.038	0.026	0.020	0.023	0.12	4
Bappedalitbang	0.007	0.049	0.025	0.012	0.022	0.12	5
Dispenda	0.027	0.046	0.042	0.031	0.023	0.17	2
DPUPRP	0.009	0.034	0.034	0.010	0.020	0.11	6
BPKAD	0.018	0.042	0.040	0.031	0.021	0.15	3
Health Office	0.056	0.110	0.097	0.054	0.024	0.34	1

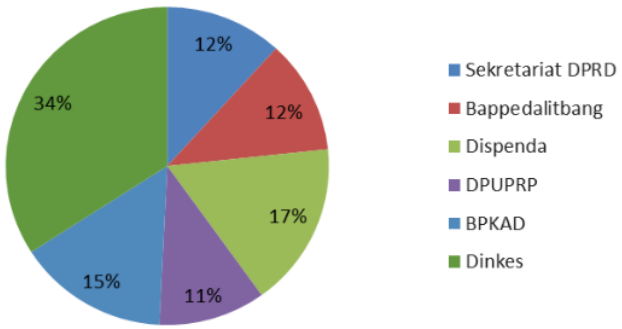

Figure 3.8. Ranking Value of State Buildings that will be handled in the form of Reliability Recommendations

From these final results, the buildings that will be prioritized for handling are with the largest weight as a result of filling out the respondents' questionnaires and analyzed using the Analytical Hierarchy Process (AHP) method, the largest being the Health Office with a percentage of 34% and the Public Works, Planning and Development Agency. Space and Land received the smallest percentage, namely 11%.

3.4. Reliability of the State Building of the Health Service

1. Architectural Components

Architectural Reliability Level is considered Reliable, if the NK or not less than 95% or (95% < NK < 100%); Less reliable, if the NK or value is 75% < NK < 95%; and Unreliable, if NK or NK value < 75%. The results of the analysis of the Architecture component at the Health Office are worth 85.41%, meaning LESS RELIABLE. The condition of the architectural components of the building is damaged

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which can reduce the aesthetics, function and comfort of the building, so that the building users feel disturbed by their comfort in carrying out their activities/occupying the building. Recommendations made are to carry out maintenance, repair, and restoration.

Table 3.25. Results of Architectural Reliability Assessment of the District Health Office. Banjar

COMPONENT	SUB COMPONENTS	MAXIMUM VALUE OF RELIABILITY(%)	ASSESSMENT CRITERIA (in %)						TOTAL RELIABILITY VALUE (%)	
			RELIABLE CONDITION	NK	LESS RELIABLE	NK	NOT RELIABLE	NK		
			95 - 100		75 - <95		<75			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ROOM IN (80%)	Suitability of use	15	According to function	100%	Still in accordance with the function	-	It is not in accordance with	-	15.00	67.38
	Floor coating	10	good	-	hair crack	78.33%	Split, break	-	7.83	
	Floor plaster	10	good	-	hair crack	78.83%	Crack, split, break	-	7.83	
	Wall cladding	10	good	-	Opaque, peeling <10%	80.67%	Lost, invisible	-	8.07	
	Wall plaster	10	good	-	Exfoliated <10%	80.67%	Lost, invisible	-	8.07	
	Doors/windows	15	Works well	-	Still works	85.00%	Does not work	-	12.75	
	Ceiling glazing	10	good	-	Exfoliated <10%	78.33%	Exfoliated 10%	-	7.83	
	SUB-TOTAL									67.38
ROOM OUTSIDE (20%)	roof covering	10	good	-	No holes	95.00%	Hollow, crushed	-	9.50	18.03
	Exterior wall cladding	2.5	good	-	Blur <50%	90.00%	Opaque 50%	-	2.25	
	Exterior floor coating	3	good	-	Worn out, wavy blurry, rough	85.00%	Split, break, fall apart	-	2.55	
	Plastering the outside floor	2.5	good	-	Cracked, chipped holes <5%	85.00%	Split, break, fall apart	-	2.13	
	Ceiling coating	2	good	-	Exfoliated <10%	80.00%	Exfoliated 10%	-	1.60	
	SUB-TOTAL									18.03
	TOTAL				Then the overall Architecture: Reliable: NK = 95-100% Less reliable: NK = 75-95% Unreliable: NK= < 75%				85.41 (less reliable)	

2. Structural Components

The level of reliability of the structure is considered Reliable, if the NK is not less than 95% or (95% < NK < 100%); Less reliable, if NK or value 85% < NK < 95%; and Unreliable, if NK or NK value < 85%. The results of the analysis of the Architecture component at the Health Service are worth 99.25%, which means ANDAL. The building of the Health Office is considered Reliable from the Structural Aspect, Overall and/or, individual structural components, in good condition, although there are minor defects/damages it does not reduce the structural reliability aspects (strength, stiffness, ductility, and durability). The recommendation is to carry out maintenance with periodic maintenance and repairs.

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Table 3.26. Results of the Assessment of the Reliability of the Building Structure of the District Health Office. Banjar

Component	Sub Component	Max Reliability Value (%)	Structural component reliability values	Reduction Factor						Total Reliability Value (%)	
				Reliable Condition	NK (%)	Less reliable	NK (%)	Unreliable	NK (%)		
				95 - 100		85 - <95		< 85			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Bottom Structure	Foundation, Foundation Head, Foundation Beam	25	100%	Strong, rigid, stable	100%	Strong, Less Rigid, Stable	-	Unstable, cracked, not strong, cracked	-	25.00	
	SUB-TOTAL										25.00
Upper Structure	Join Column - Beam	15	100%	Strong, rigid, ductile	100%	Strong, but has cracked hair	-	Not stiff, cracks are visible	-	15.00	
	Column	20	100%	Strong, rigid, ductile	100%	Strong, flexural crack	-	Flexural/shear crack	-	20.00	
	Beam	15	100%	Strong, rigid, ductile	100%	Strong, flexural crack	-	Flexural/shear crack	-	15.00	
	Floor Slabs	4.5	100%	Strong, durable, safe	100%	hair crack	-	Crack 1-3 mm	-	4.50	
	Roof Slab	0.5	49%	Strong, durable, safe	-	hair crack	-	Crack, leak	49%	0.25	
	Roof Frame, Wind Ties, Gording	5	95%	Strong, rigid, safe	95%	Softness > L/300	-	Crack, leak	-	4.75	
	SUB-TOTAL										59,50
Complementary Structure	Ceiling Hanger	1	82%	Strong, even/flat	-	Strong, uneven	-	Not flat, there is a deflection	82%	0.82	
	Masonry/Brick Wall	2	96%	Strong, no cracks	96%	Weak anchor rod, hair crack	-	No cracked/split wall anchors	-	1.93	
	Children's Beams, Geufel, Canopy	6	100%	Strong, rigid, ductile	100%	Strong, flexural crack	-	Flexural/shear crack	-	6.00	
	Concrete/steel/wooden stairs	6	100%	Strong, stiff	100%	Cracked hair, strong, limp	-	Broken, not stiff, flex	-	6.00	
	SUB-TOTAL										14.75
TOTAL VALUE OF STRUCTURAL RELIABILITY OF CONCRETE FRAME BUILDING AND COUPLE WALLS						Then the overall structure: Reliable: NK = 95-100% Less reliable: NK = 85-95% Unreliable: NK= < 85 %				99.25 (reliable)	

3. Utility Components

The level of reliability of the structure is considered Reliable, if the NK or not less than 99% or (99%<NK<100%); Less reliable, if NK or 95% < NK < 99%; and Unreliable, if NK or NK value < 95%. The result of the analysis of the Architecture component at the Health Office is worth 59.73%, which means it is NOT RELIABLE. The unreliability of utility components is caused by non-functioning / damaged utility components and the absence of several utility sub-components. One or more utility components (fire prevention system, ft/escalator, electrical installation, sound system, lightning rod) are damaged/not functioning, their capacity is (far) below the value specified in the design/specification so that the reality and function of the space and /or the building becomes (very) disturbed or unusable.

Some of the incomplete sub-components include very minimal fire prevention installations, transportation verticals, plumbing, electrical installations, and communication installations that do not

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exist/are not available. Actions that need to be taken to overcome so that buildings can be of reliable value in utility components are renovation, restoration, overhaul, and demolition actions as well as new replacements. To achieve reliable conditions in this utility aspect, it is necessary to add several facilities that do not yet exist, such as complete fire protection, vertical transportation, complete plumbing, communication installations, and electrical installations.

Table 3.27. Results of Assessment of Utilities Reliability and Fire Protection Building District Health Office. Banjar

No. Utility Components	Types of Building Utility Components Installation	Max Value Reliability (%)	ku (%)	Condition Reliable, Less Reliable, Unreliable (%)			Reliability μku (%)
				reliable	KA	TA	
				99 -100	95 - <99	<95	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Fire Prevention Installation	20	0.80	-	-	4.00	59.73
2	Vertical Transportation	15	0.00	-	-	0.00	
3	Plumbing	15	13.39	-	89.24	-	
4	Electrical installation	20	18,16	-	90.78	-	
5	Air Conditioning, AC	15	14.89	99.24	-	-	
6	Lightning rod	5	5.00	100.00	-	-	
7	Communication Installation	10	7.50	-	-	75.00	
Total Reliability Value of all Utility Components (μku.i)			59.73	Then the overall Utilities of the building: Reliable: ku = 99-100% Less reliable: ku = 95-99% Unreliable: ku = < 95%			Unreliable

4. Accessibility Components

Accessibility Reliability Level is considered Reliable, if the NK or not less than 99% or (99%<NK<100%); Less reliable, if NK or value 90% < NK < 99%; and Unreliable, if NK or NK value < 90%. The results of the Accessibility component analysis at the Health Office are 42.60%, meaning NOT RELIABLE. Unreliability of accessibility components is caused by one or more accessibility components (basic size of space, pedestrian paths and RAM, parking areas, control equipment and equipment, toilets, doors, accessibility lifts, telephones, and stair lifts) that are damaged/not functioning, difficult to use, is not accessible to everyone and does not meet safety requirements.

Table 3.28. Results of the Accessibility Reliability Assessment of the District Health Office Building. Banjar

No. compo. Accessibility	Types of Building Accessibility Components	Max Value Reliability (%)	ku (%)	Condition Reliable, Less Reliable, Unreliable (%)			Factored Reliability Value (%)	Reliability N ku(%)
				reliable	KA	TA		
				99 - 100	90 - <99	<90		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Room Base Size	20	100	100	-	-	20	42.6 (Unreliable)
2	Pedestrian Path & RAM	20	0	-	-	0	0	
3	Parking area	10	46	-	-	46	4.6	
4	Control Equipment & Equipment	5	45	-	-	45	2.25	
5	Toilet	20	65	-	-	65	13	
6	Door	10	0	-	0	0	0	
7	Accessibility Elevator	10	0	-	-	0	0	
8	Phone	5	55	-	-	55	2.75	
9	stair elevator	-	-	-	-	-	0	
Total Reliability Value of all Utility Components				Then Overall building utility: Reliable: ku = 99-100% Less reliable: ku = 90-99 % Unreliable: ku = < 90%				42.6 (Unreliable)

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In addition to this, there are no pedestrian paths and RAM, the parking area is not large enough, many control equipment and tools are not available, doors for people with disabilities are not eligible, and there are no accessibility lifts and stair lifts, telephones are not complete, especially for people with disabilities. , there is no special toilet for the disabled as a condition of accessibility. Actions that need to be taken to overcome so that the building can be of reliable value in the accessibility component are renovation, restoration, overhaul/ demolition, and replace with new ones.

5. Components of Building and Environment

Accessibility Reliability Level is considered Reliable, if the NK or not less than 99% or (99%<NK<100%); Less reliable, if NK or value 75% < NK < 99%; and Unreliable, if NK or NK value < 75%. The results of the Accessibility component analysis at the Health Office are 100%, meaning RELIABLE. In this case, the administrative requirements regarding building layout and the environment have been fulfilled, both the requirements for the Basic Building Coefficient (KDB), Building Floor Coefficient (KLB), and Building Boundary Lines (GSB). The condition of conformity of the building and environmental components is more related to the policy-making steps, so for buildings with a 100% reliability level, only periodic inspections from the Banjar Regency Building Supervision and Spatial Control team (do not add to the physical building beyond the provisions of KDB, KLB, and GSB on the building).

Table 3.29. Results of the Building and Environmental Reliability Assessment of the District Health Office Building. Banjar

No. Component Code	Parking Component Functional Condition			Maximum Reliability Value (%)	Factored Reliability	Reliability Value
(1)	(2)			(3)	(5)	(6)
	COMPATIBILITY WITH THE CITY PLAN DOCUMENT					
	Conformity with the city plan document	**Yes**	**Not**	5	5	100
1	KDB compatibility			2	2	
2	KLB compatibility			2	2	
3	GSB compatibility			1	1	
	TOTAL			Then the overall Building and Environment: Reliable: NK = 95-100% Less reliable: NK = 75-95% Unreliable: NK= < 75%		**100 (Reliable)**

6. Recommended Reliability Components as Priority

Assessment of the reliability of the Health Office building, architectural components, utilities, and accessibility which are considered less reliable. Architectural components are considered unreliable with components that need to be repaired, namely the interior sub-components (floor cladding, floor plastering, wall cladding, wall stucco, doors/windows, and ceiling cladding) and outdoor components (roof coverings, cladding). exterior wall cladding, exterior floor cladding, exterior cladding, and ceiling cladding). The architectural component that greatly affects the damage to other architectural components is the outer space sub-component, namely the roof covering.

The results of the assessment of the reliability of the structure are considered reliable, but in the upper structure, some sub-components are considered unreliable, namely the roof slub with a maximum reliability value of 0.5% and a final total reliability value of 0.25%, so that it does not affect the reliability results. However, this sub-component is very influential on the damage to architectural components. Complementary structures such as suspended ceiling sub-components are rated as unreliable with a final total reliability value of 0.82%.

The results of the assessment of utility reliability and fire protection are considered unreliable in the sub-components of fire prevention installations, vertical transportation, and communication installations. The results of the assessment of utility reliability and fire protection are considered less reliable are the plumbing and electrical installation sub-components. The results of the accessibility

reliability assessment that are considered unreliable are the parking area sub-components, control equipment, and equipment and toilets.

The results of the Analytical Hierarchy Process (AHP) method, the most important component repaired in the assessment of building reliability is the structural component with a percentage of 32%. Based on the results of observations or assessments of building reliability and AHP results, it can be concluded that although structural components are reliable, there are sub-components of roof coverings and roof slabs that are considered unreliable and very influential on architectural damage because these sub-components are the main source of damage to the Office. Health. Therefore, the sub-components of the roof covering on the architectural components and the sub-components of the roof slab on the structural components are prioritized for handling first for repair and demolition.

This roof covering and roof slab causes rainwater seepage which causes serious damage to the ceiling cladding, wall cladding, and floor cladding on the 2nd and 3rd floors of the Health Office building. After the roof covering and roof slab were repaired, total restoration and demolition were carried out on the architectural components of the sub-components of the ceiling cladding from plywood and the sub-components of the wooden ceiling hanging sub-components which were no longer feasible because they were 19 years old. Furthermore, other architectural components are carried out maintenance, repair, and restoration. Architectural components that affect the utility component, as well as the accessibility component, will be repaired simultaneously. After the utility and fire protection components have been renovated, restored, remodeled, and demolished as well as new replacements, the last is the accessibility component which is renovated, restored, remodeled/demolished, and replaced with new ones.

4. Closing

4.1 Conclusion

1. The results of the Weighting Analysis of Building Assessment Components in Banjar Regency obtained the total reliability value of the DPRD Secretariat building of 78.34% included in the less reliable category, the Development Planning, Research and Development Agency building of 78.38% included in the less reliable category, The Regional Revenue Service Building of 77.61% is in the less reliable category, the Public Works, Spatial Planning and Land Office building of 78.42% is in the less reliable category, the Regional Financial and Asset Management Agency Building of 77.66% is in the category less reliable, and the Health Office Building of 75.31% is in the less reliable category.
2. The results of the analysis using the Analytical Hierarchy Process (AHP) method obtained that the order of state buildings is absolutely important to be handled first based on a priority scale with a larger percentage being prioritized, namely the Health Office Building by 34% (Priority 1), the Regional Revenue Service Building 17% (Priority 2), Regional Financial and Asset Management Agency Building 15% (Priority 3), DPRD Secretariat Building 12% (Priority 4), Regional Development Planning, Research and Development Agency Building 12% (Priority 5) and the Public Works, Spatial Planning and Land Office Building by 11% (Priority 6).
3. The recommendation given in this study is the State Health Office Building which is the priority based on the results of the largest percentage of the Analytical Hierarchy Process (AHP) method. This recommendation is based on categories that have great potential to be applied to the Health Office building and is designed to increase the level of reliability of the building. Based on the results of the assessment of the reliability of the State Health Office building, the value of the building is considered to be less reliable (75.31%). This is due to the unreliability of the Architecture component, and the unreliability of the Utility and Accessibility component. Recommendations for actions taken on the Architectural component are maintenance, repair, and restoration. Recommendations for actions taken on utility components are renovation, restoration, overhaul, and disassembly as well as new replacements. Recommendations for actions to be taken on the accessibility component are renovation, restoration, overhaul/ demolition, and replacement of new ones.
4. Based on the results of the analysis using the Analytical Hierarchy Process (AHP) method, the most important component to improve in assessing the reliability of a building is the structural component

with the largest percentage, which is 32%. The final result of the reliability assessment of the building stated that the structural components of the Health Office were considered reliable, but the sub-components of roof slabs and ceiling hangers were categorized as unreliable, so the recommendations made were renovation, retrofitting, demolition, and replacing new ones.

5. The reliability component that is a priority for handling at the Health Office is the architectural component in the form of a roof covering and a structural component in the form of a roof slab. These two sub-components cause rainwater seepage which causes serious damage to the ceiling surface coating, wall coating, and floor coating on the 2nd and 3rd floors of the Health Office building. After the roof covering and roof slab were repaired, total restoration and demolition were carried out on the architectural components of the sub-components of the ceiling cladding from plywood and the sub-components of the wooden ceiling hanging sub-components which were no longer feasible because they were 19 years old.

4.2 Suggestion

1. The consequence of the void of standard references or technical guidelines in the inspection of existing building structures that are not visually visible so that it leads to subjective assessments, which has the opportunity to cause differences of opinion and the results cannot be accounted for, so it is necessary to develop technical standards and guidelines relating to structural inspections. existing buildings that are not visually visible. These guidelines will definitely lead to improvements to the building reliability assessment format compiled by the Director General of Building and Environmental Management (PBL) of the Ministry of Public Works and Public Housing.
2. The scoring system in this study uses visual observation with simple tools. In order to know more about the condition of the building in particular, an assessment with more specific methods and equipment can be developed.
3. The building reliability assessment system used can be developed with more flexible and communicative software applications and the assessment team that carries out the assessment are people who are competent in the field of their respective reliability components.
4. The decision-making system for state buildings that prioritizes the handling of local governments using the Analytical Hierarchy Process (AHP) method is not only based on reliability criteria but can also be analyzed using non-technical criteria such as regional financial aspects, ease of access, building age, management/maintenance organization. building, and aspects of building users/occupants.
5. This research is expected to be useful in contributing to knowledge related to the reliability of state buildings, especially to the local government of Banjar Regency in the maintenance, utilization, preservation, and demolition of state buildings.

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