

# Architect's Perceptions of a Requirement of Building Architecture on Design Process

## Case Study : Architectural Design Practice in Bali

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**Abstract** Concerns about the waning identity of Balinese architecture led the Provincial Government of Bali to issue Perda No. 2, 3, 4 of 1974, which was later revised to No. 5 of 2005 concerning Architectural Requirements of the Building. . This requirement emphasizes that building architecture in Bali must have the characteristics of Balinese traditional architecture, especially in tourism areas where there are many tourist accommodations. But on the other hand, there are various perceptions and interpretations according to the interests of each architect regarding the Architectural Requirements of the Building. Architects as practitioners in architectural design have a responsibility to maintain environmental quality, especially architecture in Bali. This study aims to identify the Architectural Requirements from an architect's point of view. The subject is architects who practice in Bali, selected by purposive sampling technique with the keyword tourist accommodation architectural designers in Bali. The variables of the design process that are the focus of the study are aspects of creativity dan critical issues. This study uses a qualitative descriptive analysis method, namely by using a questionnaire with a Likert scale. Data analysis was performed by ranking each statement variable to obtain a comparison between the architect's interpretation variables. This study identifies two broad categories, namely how architects view traditional Balinese architecture as a priority issue that must be considered in designing and how the architect's cognitive response to Architectural Requirements in the design process.

**Keywords:** *perception, architect, regulation, creativity, design process*

### I. INTRODUCTION

In designing, some designers use the main generator strategy by selecting central or critical issues that are the main generators of design problems and solutions [1]. The priority issue as a basic concept used by designers to generate derivative concepts in solving design problems cannot be separated from the theme of cultural tourism in Bali. Therefore, generally hotel architecture in Bali uses the uniqueness of Balinese culture and nature as a critical issue that generates concepts in the design of tourist accommodation in Bali, such as the "Bali Style" concept developed by the first generation of foreign architects in Bali. [2]. The Provincial Government of Bali strives to maintain cultural tourism as the theme of tourism development in Bali, especially in areas that are filled with tourism functions, the traditional image must be thicker. The government emphasized the theme of Balinese cultural tourism, with the making of the Bali Provincial Regulation number 2, 3, 4 in 1974 covering the principles of Balinese architecture as a basic reference in architectural design and then revised to Number 5 of 2005 with an emphasis on building architecture in Bali must have a local cultural identity, especially in tourism areas.

According to Gomudha, since the enactment of regional regulation number 2,3,4 in 1974 and revision number 5 in 2005 to the present, there have been various interpretations according to the interests of each architect

regarding the Architectural Requirements for Buildings in Bali [3]. On the other hand, the regulations regarding requirements of building architecture can be a limitation for creativity, when there are limitations, architects generally apply typical solutions and produce general designs [4]. But the fact is that architects can come up with multiple solutions to the same problem. Because each architect tends to see the problem differently [1], because each architect involves a subjective interpretation. According to Lucy Kimbell, architects are the main actors in the design process [5], who have the responsibility and participate in shaping the built environment. The background possessed by the architects also shapes thoughts about the point of view of the requirements of building architecture, as well as the peculiarities of Balinese culture and nature.

According to Lucy Kimbell, architects are the main actors in the design process, who have the responsibility and participate in shaping the built environment. The background possessed by the architects also shapes thoughts about the point of view of the requirements of building architecture, as well as the peculiarities of Balinese culture and nature [6]. So that in this study, architects are the right subjects to research Balinese traditional architecture as a requirements of building architecture because the architect's background knowledge certainly forms a certain perception in architectural design in Bali.

Research on architects' perceptions of traditional Balinese architecture as a requirement of building architecture aims to determine the viewpoints, preferences, and considerations of critical issues in the architectural design of buildings in Bali. The benefits of the results of this study can be used by the Bali provincial government as a consideration for the evaluation of the Regional Regulation on Building Architectural Requirements in the Balinese context which continues to develop from professional considerations, namely architects.

### A. Perception

Lexically, perception means response, comprehension, or understanding. Theoretically, perception is the process of distinguishing one stimulus or stimulus from another by interpreting it or the process of organizing data that enters the sensory or sensory system, or it can also be said to be a process that occurs when people choose, receive, organize, and translate information from the environment [7]. The same thing was stated by William Ittelson that perception is part of the life process that everyone has at a certain point, then that person creates what he sees for his world, then that person tries to take advantage of his satisfaction [8].

In the process of understanding perception, many theories describe perception. Transaction of perception is a theory of perception that emphasizes the role of past experiences projected into the present situation through one's attitude about their needs. Therefore, the formation of perceptions is influenced by three factors, namely stimulus, situation, and personal [9]. The stimulus is human consciousness that affects the sensory nervous system. A situation is an environmental condition that underlies life as a stimulus. Personal are things that are attached to the subject (who perceive), such as gender, age, education, needs, assumptions, beliefs, and patterns of thought. Thus, each individual can have different perceptions, even with the same object.

William Ittelson identifies four dimensions in perception, including cognitive, affective, interpretative, and evaluative [8]. Cognitive is a dimension that involves the mind as the organization and storage of information relating to objects. Affective is a dimension that involves feeling as a perceptual influence related to the object. Interpretative is a dimension of meaning or condition that uses previous experiences compared to stimulation experienced now. Evaluative is a dimension that includes values and preferences and determines positive or negative elements in an object. According to Sueca, in perception, there is recognition, comparison, absorption, and interpretation, as well as forming the meaning and characteristics of the object of perception [6]. Thus, perception relates to the way a person relates to the environment, as well as the way a person understands information and then interprets it. The same information can be understood and interpreted differently by each individual. Because according to Laxton (Figure 1) there is experience and knowledge that will affect the ability to express, evaluate and interpret [1].

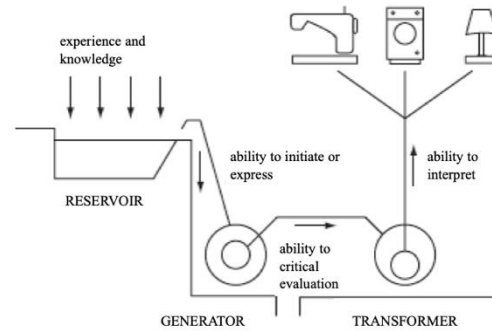


Figure 1. Laxton's Ingenious Hydro-electric Model of Design Learning  
Source : Lawson, 2005

### B. The Requirements of Building Architecture

The requirements of buildings architecture in Bali are inseparable from the efforts to preserve Balinese Traditional Architecture. The definition of Balinese Traditional Architecture according to Article 1 point 7 in Regional Regulation Number 5 of 2005 is a spatial layout and structure whose construction is based on values and norms, both written and unwritten, which have been passed down from generation to generation. As what is meant in this definition, that buildings in Bali are inseparable from the requirements of buildings architecture which serve as directions or guidelines for architecture in Bali. The regional regulation aims to regulate the physical development system in Bali, as well as to preserve the values of Balinese Traditional Architecture.

Typologically, Balinese Traditional Architecture can be distinguished, among others: the architecture of the holy place, residence, and public buildings. In Regional Regulation Number 5 of 2005 buildings are classified based on their architectural shapes and characters, which are distinguished from traditional Balinese buildings and non-traditional Balinese buildings. [10]. Traditional Balinese buildings are buildings built based on traditional Balinese norms, both written and unwritten, and are still accepted and used by the community from generation to generation. Meanwhile, non-traditional Balinese buildings can be distinguished from traditional Balinese buildings that were developed or modified, and modern buildings that have a style or principle of form and have the characteristics of traditional Balinese or local architecture. Article 13 (regional regulation number 5 of 2005) states that: Non-Traditional Balinese Building Architecture must be able to display traditional Balinese architectural styles by establishing the principles of Balinese Traditional Architecture which are harmonious, balanced, and integrated with the local environment. The principles of Balinese Traditional Architecture including (1) spatial planning, (2) layout, (3) building layout, (4) structural shape, (5) utility and ergonomics, and (6) ornaments and materials. The requirements for building architecture in regional regulation of number 5 of 2005 refer to the characteristics of Balinese Traditional Architecture, including (1) Attention to the principles of outer appearance and space in buildings; (2) Taking into account the principles of balance, harmony, and integration of a building with its environment; (3)

Pay attention to the noble values and identity of Balinese or local culture.

In his research, Gomudha analyzed Balinese Traditional Architecture based on two faces, namely the level of content and the level of expression, and each face is divided into two sub-types, namely form and substance. Gomudha's research resulted in the findings of a Balinese architectural performance matrix containing four architectural elements as performance indicators [3], among others: (1) the philosophy of Tri Hita Karana as the core (concept) of Balinese Traditional Architecture; (2) Layout and orientation; (3) Mass layout or setting; (4) Building layout includes the figure of the building, the shape of the building, the scale and proportion, ornaments and decorations, as well as structures and materials. The matrix can be used to measure the performance of Balinese architecture in design or built works.

**Table 1.** Variable Representation of Balinese Traditional Architecture

No.	Characteristic of Balinese Traditional Architecture	Principles of Balinese Traditional Architecture
1	Attention to the principle of the building appearance	Traditional building norms, forms and characteristics of ATB that are generally accepted, forms and characteristics of the according to the local architecture and the environment, forms and characteristics according to the function of the building
2	Attention to the principles of balance, harmony, and integration of buildings with their environment	Showing the figure of Balinese buildings, creating open spaces, attention to the potential of the environment and building functions
3	Attention to the norms and cultural local identity	Applying the principle of spatial layout and orientation, mass layout, and principle of building design
4	Spatial layout and orientation	Tri mandala, sanga mandala, hulu-teben, natah patterns
5	Mass layout	The open space between the masses, courtyard, the holy place
6	Building design	Height limits, building figures, Balinese tectonics, Balinese ornaments, honesty of materials

Source : Modification from Bali Regulation No 5 Year 2005, Gomudha.

## II. RESEARCH METHODS

The data collection method was carried out with a qualitative approach, including two stages, namely: 1) Secondary data collection through literature studies and local regulations, to obtain data related to the characteristics of Balinese Traditional Architecture from the Bali Provincial Regulation Number 5 of 2005 [10] and the principles of Balinese Traditional Architecture from the Performance Matrix Balinese Architecture by Gomudha [3]; 2) Primary data collection through online surveys, respondents are asked to fill out a questionnaire in Likert Scale format with the keyword Balinese Traditional Architecture and respondents are also asked to provide opinions regarding requirements of building architecture by the evolving Balinese context. Data were taken from 45 respondents who were architects of IAI Bali who had designed tourist accommodation in Bali.

The first stage data analysis method used is to rank each statement variable to get a comparison between the architect's answer variables in the design process. The second method of analysis is a comparison between the architect's statements regarding Balinese traditional architecture as requirements of building architecture by the evolving Balinese context.

## III. RESULTS AND DISCUSSION

### A. Architect's Perception of Balinese Traditional Architecture as Requirements of Building Architecture

Based on the results of distributing questionnaires to 45 architects who have designed tourist accommodation in Bali, it can be seen that 88.9% of architects have considered Balinese Traditional Architecture since the beginning of the design process, and only 11.1% have considered Balinese Traditional Architecture since arranging a Building Permit (chart 1). Based on these data, it can be concluded that most of the architects who have designed tourist accommodation in Bali consider Balinese Traditional Architecture in the design process, and most of these architects consider that Balinese Traditional Architecture is not only an element of requirements of building architectural. This is reinforced by the results of the questionnaire that most of the 45 architects, namely 55.6%, stated that they know and understand Balinese Traditional Architecture in terms of building architecture (chart 2). Based on the results of the questionnaire it is known that the considerations of Balinese Traditional Architecture are manifested mostly through

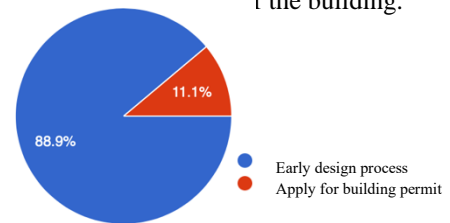


Chart 1. Architect's Perception Chart of Balinese Traditional Architecture on Design Process  
Source : Author

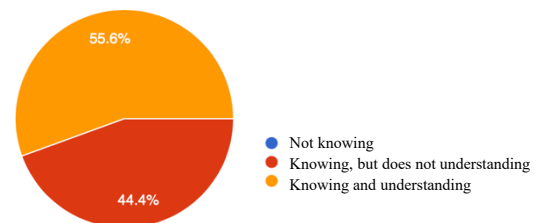


Chart 2. Architect's Perception Chart of Balinese Traditional Architecture as Regulation on Design Process  
Source : Author

### B. Architect's Perception of a Requirement of Building Architectural in Design Creativity

Based on the results of distributing questionnaires to 45 architects who have designed tourist accommodation in Bali, it can be seen that 55.6% of architects think that

the requirements of building architecture (regional regulation number 5 of 2005) limit the creativity in the design process. Meanwhile, 44.4% of architects thought that the architectural requirements of the building were not a limitation for creativity in the design process. Based on the data (chart 3), it can be concluded that most of the architects who have designed tourist accommodation in Bali argue that building architecture (regional requirements) are a limitation for creativity in

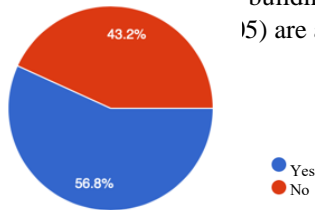


Chart 3. Architect's Perception Chart of Regulations as a Limit of Creativity in the Design Process  
Source : Author

In the questionnaire regarding the statements of 45 architects who have designed tourist accommodation in Bali regarding the requirement of building architectural, a total of 8 keywords were obtained in the statement requirement as the limitation of creativity in the design process, and 4 keywords in the statement requirement did not limit creativity in the design process. The results of the analysis show the statement requirements of building architecture as the limit of creativity in the design process refers to "only arranging the visible aspects, namely 17.7% (chart 4).

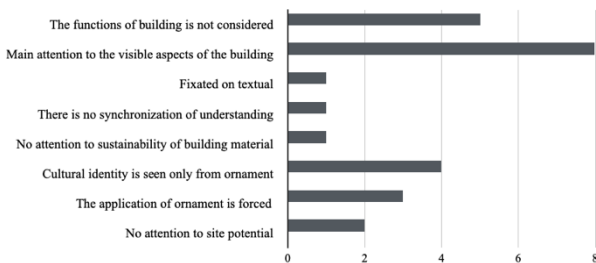


Chart 4. Distribution of Keywords as a Limit of Creativity in the Design Process  
Source : Author

From the various keywords shown in Figure 2, some of the keywords with the highest frequency were taken and the sentences represented can be seen in Table 2. Keywords such as "appearance, facades, patches and ornaments, an image of buildings, and roof shapes" were the reasons for most architects. Besides, the keyword "building function is not considered" because "the application of local cultural identity does not adjust to the function of the building", besides that "the architectural face of the building with different functions looks the same" is one of the reasons with a large number of frequencies namely 11.1% of 45 architects.

Table 2. Keyword Requirements as a Limit of Creativity in the Design Process.

Keywords	Representation of The Architect's Statement
The function of the building is not considered	The embodiment of cultural identity also needs to follow the function of the building, to find the identity of the function of the building itself
Main attention to the visible aspects of the building	The current requirements only regulate the form, it should be focused on climate response
There is no synchronization of understanding	It is necessary to have a common understanding between regulators, users and architects as design stakeholders
Fixated on textual	More empirical in it's delivery and application, not limited to the text
No attention to sustainability of green space and building material	Height limits should be applied to certain zones, to reduce horizontal building growth which causes less green space
Cultural identity is seen only from ornament	To be called 'Bali' is often just to attach as many ornaments as possible
The application of ornament is forced	The building facade is no longer harmonious or proportional
No attention to site potential	The site potential should be a priority

Source : Author.

Meanwhile, the statement of requirements of building architecture does not limit the creativity in the design process, referring to the keyword "embodiment of cultural identity" as much as 23% of architects (chart 5). This is explained by the architect through the following statement: "applying the concept of Balinese Traditional Architecture", "applying local materials", "applying a building figure with a head-body-leg division", "applying courtyard pattern (*natah*)", and "attention to height limits". The description of the reasons given by the architect for the keyword requirement of building architecture is not a limitation of creativity in the design process can be seen in Table 3.



Chart 5. Distribution of Keywords Requirements Not as a Limits of Creativity in the Design Process  
Source : Author

Table 3. Keyword Requirements Not as a Limit of Creativity in the Design Process.

Keywords	Representation of The Architect's Statement
Embodiment of local cultural identity	Application of building proportions adapted to material technology
Preservation of local wisdom	The application of his philosophy is not just what is appearing
Harmony with the built environment	Following the rules of traditional Balinese building layout
Harmony with the natural environment	Application of courtyard ( <i>Natah</i> )

Source : Author.

### C. *Balinese Traditional Architecture as Main Generator in the Architectural Design Process*

From the analysis of the questionnaire data that produces the various keywords above. The requirement of building architecture can be grouped into several criteria based on design problems. The architectural design process in Bali cannot be separated from critical issues related to the problem of local cultural identity in the architecture of the building. Bryan Lawson explained that design problems can be classified based on the origin of the problem, the side of the problem, and the function of the problem. [1]. The first problem, seen from its origin, is a problem related to the actors involved in the design process, such as architects, clients, users, and licensors. The second problem is seen from the internal and external sides. Problems from the internal side are problems in the design brief, while problems from the external side are problems in the design results. The third problem is seen from its radical, practical, formal, and symbolic functions.

Traditional Balinese architecture becomes a critical issue in the architectural design process in Bali which is strongly influenced by the origin of the problem, namely from the licensor. In this case, it is the party authorized to issue a building permit, which will first check the design documents. The licensor through regional regulations number 5 of 2005 regulated the appearance and form of architectural works, which must pay attention to Balinese Traditional Architecture by the Requirements of Building Architecture (Regional Regulation No. 5 of 2005). Problems with Balinese Traditional Architecture in the requirement of building architecture arise from the licensor, which is the permit is influenced by the external side, the impact of the design or appearance of the architectural work must be by the characteristics of Balinese Traditional Architecture. Balinese traditional architecture is also inseparable from problems of formal and symbolic functions. The formal function is related to the form of architectural work, while the symbolic function is related to the representation of the characters that must be displayed.

It is further explained that the problems of formal functions are related to the shape of the design, the appearance that will appear, and the visual aspects. Referring to this theory, the requirement of building architecture as the main generator in the design process also includes architectural problems with the classification of problems with formal functions. Through further analysis, the comparison regarding the requirements of building architecture as the limit of creativity or is not depicted in chart 3 above. It can be seen that the survey results illustrate that the building appearance that will appear is an aspect that is considered to be the limit of creativity in the design process.

Most architects consider the requirement of building architecture to be nothing more than a set of rules that must be adhered to and are generally only seen as an insignificant part of the design process. This is different from the design process that occurred in Bali, where the issue of Balinese Traditional Architecture as a requirement for building architecture in Bali based on Regional Regulation No. 5 of 2005 has become the main generator of architectural design problems and solutions in Bali. Balinese traditional architecture which is a

priority is the basic concept used by designers to generate derivative concepts in solving architectural design problems in Bali. According to Rob Imrie, building regulations greatly influence creative practices and processes in architectural design [11]. Thus, architects that have practical in Bali must give attention and consideration to a critical issue, namely Balinese Traditional Architecture as a requirement for building architecture in Bali based on Regional Regulation Number 5 of 2005.

### IV. CONCLUSION

Researchers found that as many as 55.6% of architects felt that the architectural requirements of the building (regional regulation number 5 of 2005) were a limitation for creativity in the design process. This is based on the architect's statements that refer to keywords, such as: (1) only adjusting the form / visible aspect; (2) the function of the building is not considered; (3) Balinese / local cultural identity can only be seen from the ornament; (4) enforced ornament application; (5) does not pay attention to site potential; (6) fixated on textual; (7) there is no synchronization of understanding; (8) does not pay attention to land sustainability. Meanwhile, 44.4% of architects considered that the architectural requirements of the building were not a limitation for creativity in the design process, referring to keywords such as (1) embodiment of cultural identity; (2) preservation of local wisdom; (3) harmony with the surrounding environment; (4) harmony with nature. Building architectural requirements (Perda No. 5 of 2005) which contain the results of these perceptions, it is known that traditional Balinese architecture becomes a critical issue in the architectural design process in Bali which is strongly influenced by the origin of problems in the design process, namely from the licensor and the architect. The description of the architect's perception of the architectural requirements of the building as the main generator in the design process also includes architectural problems with the classification of formal functions, because the appearance that will emerge is an aspect that is considered to be a limitation of creativity in the design process. In the architectural design process in Bali in particular, architects must pay attention and considerations to critical issues, namely Balinese Traditional Architecture as a requirement for building architecture in Bali based on Regional Regulation Number 5 of 2005. Because building regulations (especially in Bali) greatly influence creative practices and processes in architectural design. However, it was found that 88.9% of architects had considered Balinese Traditional Architecture

Researcher's recommendations related to the architect's perception of the architectural requirements of the building as information can be continued through further research that discusses the processing of the same information that can be understood and interpreted differently by each architect, because of the architect's background experience and knowledge that will affect the ability to express, evaluate, as well as interpret. It is necessary to do a further study of the architect's background knowledge and experience.

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