Bamboo as local material for hotel interior finishing

Inna A L Hakiki, Sigit Wijaksono, Yosica Mariana
Architecture Department, faculty of Engineering, Bina Nusantara University, Jakarta, Indonesia 11480

Corresponding author: swijaksono@binus.edu

Abstract. In hotel design, there are 7 aspects of consideration, one of which is the use of cost-effective and efficient local materials, so that the design of this hotel implements the use of local materials which are chosen in the form of bamboo, where bamboo is the largest non-timber forest product in Indonesia. The research used a qualitative method of literature study. Data analysis was carried out based on the selection of the type of bamboo and the choice of space to be used by bamboo in the interior. The result of this research is the use of bamboo for the interior walls of the hotel.

Keywords: local material, bamboo, interior hotel

1. Introduction
In designing a hotel, aspects of design considerations are needed. there are 7 aspects of consideration in designing hotels, one of which is suitable material or suitable material, where hotels must be designed in such a way that they must be able to use locally available materials which will be cost effective and efficient [1]. The design of a hotel uses local materials with terms of cost-effective and efficient. As seen from the material requirements that are cost-effective and efficient, the raw materials used in buildings must have safe requirements for human health and the environment and these materials can be reused or renewable, the manufacturing process is also safe, efficient and does not cause pollution or hazardous waste. This definition is better known as ecological materials or green materials or the term sustainability of materials (sustainable materials). Indonesia has round wood species produced with a total of 55 522 955.25 with the most number of acacia wood. And the amount of Non-Timber Forest Product is 20 713 852.34 stems with the most number is bamboo [2]. Seen by these results, Indonesia is rich in wood and non-timber forest products. So, using local materials in development is very feasible [2]. Bamboo can be an alternative in the application of ecological materials. Bamboo has met four categories of requirements that must be met to be categorized as an ecological material [2].

The first requirement of ecological materials is the exploitation and manufacture (production) of building materials using as little energy as possible. Building bamboo structures or materials using bamboo materials, requires less energy and produces less carbon dioxide compared to reinforced brick-concrete buildings during the life cycle of a building [2]. Based on data from the 2018 Indonesian statistical center agency, the number of Non-Timber Forest Product Production is 20 713 852.34 stems with the highest amount of bamboo. Based on these results, bamboo is the highest non-timber production, seen from the statistical data of 2016, 2017 and 2018, bamboo is in the top rank of non-timber forest product production. The choice of bamboo material compared to wood is because Bamboo is a material based on solar entropy. Bamboo is a building material that does not precede
renewal / regrowth by nature because it can be renewed (renewable resources). Bamboo is a sustainable building material (sustainability) so that it does not affect the balance of nature [3]. For wood, it takes a minimum of 30 years, even for certain types of plants (Ulin, Bengkris, and Teak) it takes hundreds of years to return to forest again [3].

From the existing problems and potentials, this research is in the form of a five-star hotel using bamboo as an interior material in South Jakarta, which focuses on interior walls to increase the value of bamboo and promote sustainable materials in hotel buildings in South Jakarta.

2. Methodology
The method used in this research is literature study method (Figure 1). Literature study is a qualitative research conducted to obtain an overall picture of the research that has been conducted first. The data obtained were then analyzed using descriptive methods. Descriptive analysis method is done by describing facts which are then analyzed, not only describing but providing understanding with good explanations.

![Figure 1. Research Method Diagram](image)

3. Result and Discussion
3.1. Analysis and Research Discussion
3.1.1 Analysis types of bamboo
Selection of bamboo is based on the specification aspect of the wall element, where the selected bamboo is the bamboo found in Indonesia.

3.1.2 Comparison of Bamboo material with wall element material
1. Mechanical Properties
Based on the mechanical properties of the three materials, bamboo is superior in terms of density and tensile and flexural strength compared to bricks and wood. Bricks excel at compressive strength and wood
2. The convenience of Thermal
Wood and Bricks has a much greater u-value than bamboo so that the heat insulation ability of bamboo is greater than bricks and wood. And the wood material quickly receives and releases heat because of the large U-value.
3. Durability
Bamboo has a weakness in durability, but the processing of bamboo from harvesting to preserving bamboo and storage can strengthen the durability of the bamboo. According to Lilis Trianingsih 2014
The durability of plaster bamboo is up to 90 years, this is evident from the construction of the bamboo houseplaster from the Dutch. While brick material is a material that is durable and not easily damaged by fungi, insects and powder so that it can last a very long time according to the life of the building.

3.1.3 Bamboo as an interior wall in the lobby, corridors and hotel bedrooms

Bamboo would be the interior wall material must pass through the processing thus increasing the durability of bamboo and worth qualify as a wall material. Bamboo which will be applied to the hotel interior in the lobby, corridor and bedroom area will be selected based on the bamboo selection analysis, which will be used is Apus and Wulung bamboo. Another aspect of choosing the type of bamboo to be used is size and colour, with the bamboo application method that will be installed. The following is the application of bamboo as an interior wall in Lobby, Corridor and Bedroom rooms.

a. Bedroom

Figure 2 illustrates the visual arrangement of bamboo in a bedroom. Figure 3 exhibits the placement of bamboo wall panels in a layout, and also the detailed configuration of bamboo wall panel for bedroom.

![Figure 2. Visual arrangement of bamboo in the bedroom](image)

![Figure 3. (a) Placement of bamboo wall panels on the bedroom plan, (b) detailed structure of the bamboo wall panels](image)

The application of bamboo in the bedroom uses the Laminated Apus bamboo which has a yellow-green colour with a diameter of 20 mm. The selection of bamboo is based on:

- Castaneda (2016) from the journal Application Method of Bamboo Decorative Material to Interior Design. Journal of world bamboo and rattan, Vol. 15 issue 3. Yellow bamboo is suitable for decorating large areas such as ceilings, walls, etc. Give the impression of expanding the room.

- Based on the journal Characteristics of Colors, Interior Design and Their Psychological And Physiological Effects The Turkish Online Journal of Educational Technology. The yellow color in the interior looks bright so it is considered wider than it is and yellow is a warm color so that people will consider the place warm.
The selection of Apus bamboo for the bedroom is chosen which is more dominant to yellow based from the journal ditas where the characteristic color of Apus bamboo where yellow gives expansive impression, elegant and very suitable for yellow walls is also a warm color that people will find the place warm.

The use of laminated Apus bamboo both in finishing and wall panels is because whole bamboo has a rougher shape and texture, so the use of laminated bamboo in the bedroom minimizes the rough texture so that the bedroom looks cleaner and simpler with the installation method such as wood lamination. Bamboo laminates are arranged according to design using special glue and on wall panels, using hollow, acoustic insulation material to maintain the acoustic quality of the room then laminated bamboo.

b. Lobby

Figure 4 illustrates the visual arrangement of bamboo in a lobby, and also its installation configuration. In addition, the layout in Figure 5 highlights the use of bamboo in a lobby.

(a) Visual arrangement of bamboo in the lobby, b) method of installing bamboo in the lobby

Figure 4.

Figure 5. Layout of bamboo laying in the lobby

The application of bamboo in the lobby area is based on the type of bamboo using bamboo, where wulung bamboo has a dark brown color classification with a diameter of 20 mm. the selection of bamboo is based on:
• Castaneda (2016) from the journal Application Method of Bamboo Decorative Material to Interior Design. Journal of World Bamboo and Rattan, Vol. 15 issue 3. Carbon or brownish colors can create a warm atmosphere and are suitable for living rooms.
• Based on the journal Characteristics of Colors, Interior Design And Their Psychological And Physiological Effects The Turkish Online Journal of Educational Technology. Brown color has a more positive effect on comfort. The factor is not the color itself, but the type of material chosen.

The use of wood, which is a natural material, can create a warm atmosphere. However, if chocolate is used predominantly, it may have a detractive effect. Therefore, the use of Wulung bamboo in the lobby is based on the theory of the journal above which produces a comfortable atmosphere for the first area visited by hotel users, and based on this journal, the brownish bamboo color is also suitable for the living room, where the lobby is part of the living room in the hotel.

The installation method uses whole bamboo, where the whole bamboo is stacked vertically, so that it influences the walls of the structure, the installation process is from the wall, plastered or can be coated with waterproof paint, then the bamboo is arranged and attached using special glue, assisted by a fisher.

c. Corridor
Figure 6 illustrates the visual arrangement of bamboo in a corridor, and also its installation configuration.

![Figure 6](https://example.com/fig6.png)

**Figure 6.** (a) Visual arrangement of bamboo in the corridor, (b) bamboo installation method in the corridor.

Cultivation of bamboo in the corridor using the whole Apus bamboo species, with the selection of yellow to green bamboo with a diameter of 20 mm. the selection of bamboo is based on:
• Castaneda (2016) from the journal Application Method of Bamboo Decorative Material to Interior Design. Journal of World Bamboo and Rattan, Vol. 15 issue 3. Yellow bamboo is suitable for decorating large areas such as ceilings, walls, etc. Give the impression of expanding the room.
• Based on the journal Characteristics Of Colors, Interior Design And Their Psychological And Physiological Effects The Turkish Online Journal of Educational Technology. Green has a calming, relaxing and invigorating effect. When used in the interior, it can be claimed that it would have the effect of relaxing, soothing, and even refreshing and yellow colors on the interior looks bright so they are considered larger than the actual and yellow are warm colors so that people would think the place is warm.

Selection type of Apus bamboo for the lobby based on the journal above where the green color is not suitable for large-scale rooms so that it is placed in the corridor area where the corridor has an area
that is not large and has a relaxing and refreshing effect on the corridor. The yellow color gives the impression of expanding the room, so that the corridor can look wider.

The installation method uses whole bamboo with approximately the same size, arranged horizontally on the structural wall, where the structural wall needs to be covered with plaster or a waterproof layer of fruit in the bamboo stack using special glue.

4. Concluding Remarks
Bamboo is used in the interior of the hotel wall in the lobby area, corridors and bedrooms where the lobby and bedroom are the most important areas of the hotel and the corridor is the link between the two areas so that the experience of the space is still felt. The use of Wulung bamboo for lobbies and bamboo smears in corridors and bedrooms. Based on the color and texture, in the bamboo lobby area as a wall panel with a frame made of bamboo covered by woven bamboo and plaster then using Wulung bamboo finishing, in the bamboo corridor area only as a wall finishing where the wall structure still uses bricks and in the bedroom area bamboo is also a panel with a hollow frame then there is an acoustic insulator and plaster with a bamboo smear finishing which is pressed.

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