The Use of Bamboo Material as a Support Product Display for Urban Farming Communities in Tourism Village

Titi Indahyani[1*], *Nabilla* Retnaning[1], and *Elizabeth Jessica* Muliadi[2]

[1]Faculty Member, Interior Design Department, School of Design, Bina Nusantara University, Jakarta, Indonesia, 11480
[2]Student, Interior Design Department, School of Design, Bina Nusantara University, Jakarta, Indonesia, 11480

Abstract. 'Saung Bambu' or Bamboo huts can be utilized as a unique display space facility for additional MSMEs' product values. This paper discusses the optimal design concept to display featured products from urban farming local communities. The study case of local bamboo material as a display of the urban farming environment in Cibarani village also examined some values that can be highlighted through specific research stages (literature study, online observation, and online interviews) and design stages (design concept and final implementation). The result shows that the use of bamboo material in supporting product display can impact tourist attractions in Cibarani village which also enhances the economic value itself. The conclusion states that the use of bamboo as a marketing strategy indicates a positive value for social, economic, and environmental sustainability.

1 Introduction

Some tourist destinations have exceptional products that have the potential to become unique. In general, all tourist attractions strive to boost their bottom line by offering superior goods. Cibarani village is a natural tourist attraction with activities that involve the local community, such as urban farming, which produces a variety of products such as plants, hydroponic vegetables, cacti, and other natural products that tourists can consume. Later on, this product will be sold to the general public as well as tourists.

For this study, selling superior products requires an area and space to attract the attention of a standing booth. Retail layout, allocate display space and respond to customer behavior's visitors (Heizer, Render, & Munson, 2017) Some people will be interested in visiting a place to buy if they really need the products. There are also some people who visit a place to sell just because of its attractive appearance. So that the visual of a place to sell is also an important aspect of a tourist spot. In addition to appearance, the material used also needs to be considered so that it remains environmentally friendly and can be used in the long term. In this case, bamboo is an idea that can be used as a sustainable design prototype. This interior design focuses on interior and furniture design, Bamboo hut as supporting facilities to display superior products from Cibarani village. The materials used also utilize local natural resources which are found in the Cibarani village area. The Bamboo Saung (hut) is designed to be portable to move and can be used for interior and exterior exhibitions.

1.1 Objectives

Objectives of the research are as follows:
1. Designing an interior that can support superior product display facilities characterized by the uniqueness of the Cibarani village community's products.
2. Designing circulation, interior layout, programming, and final design execution that support in increasing the value of superior products in Cibarani village.
3. Designing a display facility that uses bamboo material to integrate the natural atmosphere with Cibarani village's superior products to become a favorite and sustainable marketplace.

It is expected that the research could explore and implement the uniqueness and support the additional values of superior local products for the sustainability of local business and local business.

2 Literature Review

2.1 Tourism and Tourist

Tourism refers to trips that occur only for a moment, to refresh the mind and focuses on happiness. The emergence of tourism is based on the high human curiosity of something new. This curiosity makes human explore new areas, looking for a change of atmosphere, to gain new experiences. The development of the concept of tourism has a very rapid impact on people's lives. Aspects of economy, communication, education,

* Corresponding author:tindahyani@binus.edu

and culture are very responsive to this concept. Then, there was a link between tourism and several other aspects [1].

If tourism is an activity, people who carry out these activities are called tourists. Tourists will go around and meet the local people. In 1972 Cohen conducted research on the interaction approach between tourists and the surrounding community. By using two different approaches, he finally grouped tourists into several groups: Existential, Experimental, Experiential, Diversionary, and Recreational [1].

2.1.1 The Development of Tourism Village in Bandung

The city of Bandung, which is the capital of West Java, has a variety of physical and cultural attractions. From a physical point of view, the city of Bandung has a good geographical location with cool air. In addition, the city of Bandung has many old Dutch buildings that have high historical value. Meanwhile, in terms of culture, the city of Bandung has unique characteristics such as regional languages, traditional musical instruments, and regional dances, as well as regional specialties which are the main attraction for tourists. The high tourist attraction owned by the city of Bandung has a great opportunity to become the city of Bandung as a leading sector for the region. The tourism sector becomes a leading sector for its high contribution to the economy that is increasing rapidly every year [2].

2.1.2 Bandung Tourism Village and Local Superior Products

The formation of a creative village requires a long process. Such as the development of creative ideas in the stage of idea realization. Activities such as training carried out at that stage will always be needed to produce new products from the community. Then, to support this stage, it is necessary to strengthening the support system as well, so that the two stages are often carried out simultaneously. The dimension of time required for a change from a slum to a creative village to occur slowly. Local people began to gradually take care of their environment to support the creative village program. The community's view of the existence of a creative village is that it has a positive impact on the surrounding environment and has changed the environment become more presentable and colorful by the mural decorations on the walls. Additionally, it also has an impact on the daily life of children, teenagers, and the elderly who have space to carry out a joint activity that starts from gatherings to produce an idea that can produce creative products. The superior products in each village are also different. In Bandung, there are several well-known tourist villages with their own superior products, such as:

- Alamendah Village: various strawberry processed foods, agriculture, handicrafts, and plantations
- Panundaan Village and Rawabogo Village: rabbit farming, fisheries, agriculture and handicrafts.
- Jelekong Village: ainting, wayang golek and traditional culinary arts [3].

2.2 Cibarani Village as Tourism Village

2.2.1 Superior Products of Cibarani Village

Cibarani village has excellent products as well, just like other villages. Its main product is ornamental plants, fruits and vegetables. Lots of seeds were planted in Cibarani village, sold by the community, and become one of their superior products as well [2]. In addition, Cibarani village also sells Bandung specialties. Every Saturday and Sunday, they will hold a small bazaar, where various kinds of traditional food, performances of traditional Bandung musical instruments to introduce the culture and their superior products to tourists [2]. The urban farming system is implemented to support the local rural farming. There are several superior products that supported by urban farming. For this study, the products displayed focuses on product categories as follows:

1) Hydroponic vegetables
2) Decorative plants
3) Seed plant

2.3 The Use of Bamboo in Design

In Indonesia, there are many types of bamboo materials that can be used in construction. In addition, to the large number of bamboo, the price of bamboo is also affordable. Another advantage of bamboo is the technic of construction join is quite strong with nails and fibers. Also, bamboo is very flexible and can be easily shaped as design plan. On the other hand, we have to understand well on how to maintain the bamboo material. For saung (hut) producers, there are three categories of bamboo that usually being used fo different purposes, such as petung/betung bamboo, andong bamboo and rope/apus bamboo. For hut's construction, there are two connections can be used, such as 12 mm bolts and fibers. Foe houses, bamboo material can be modified as a minimalist, modern and natural impression and considered very sturdy because it can absorb earthquakes [4].

For the reason of strong and durable structure, the main material for this hut uses several types of bamboo. Below is the type of bamboo that use in this research:

1) Characteristic and Type of Bamboo

This research uses 3 types of bamboo to support the design studies

a) Petung bamboo
b) Andong bamboo
c) Apus bamboo

Table 1. Type of Bamboo

	Petung Bamboo	Andong Bamboo	Apus Bamboo
Scientific Name	Dendrocalamus asper	Gigantochloa pseudoarundinacea	Gigantochloa Apus
Location	Indonesia		Java, Bali, Sunda (Indonesia)
Characteristic	Grows well in tropical alluvial soil which is damp and wet, but also grows in dry areas in the lowlands and highlands	Widely used as a woven seat in front of the house, winnowing and rigging. In the industrial world it is used in the construction sector (house buildings and roofs), furniture, umbrellas, kitchen equipment, and ropes.	Grows in the humid tropics as well as in dry areas, both in the lowlands and in the highlands. When growing in dry areas often the stems become smaller and thicker.
Dimension	grows up to 20 m, erect and solid with curved ends	has a length of the base of the trunk 31 cm, the middle 39 cm, and the tip of the stem 33 cm. The length of the midrib is 42 cm and the width is 47 cm. The thickness of the bamboo base is 2.5 cm, the middle is 1.8 cm, and the end of the stem is 7 mm.	grows to 22 m, straight, upright, and tight.
Color	Brown to Blackish	When it fresh: green with vertical stripes when it dries: beige or yellow	Brown

As natural material, and during the process of saung production, bamboo is potential material for zero waste design concept. Interconnected circular networks in southern China demonstrate the potential for a closed loop value chain. A handful of businesses exist expressly to convert 'waste' from one industry into high-value bamboo goods (Figure 1). In addition, it is beneficial to use the overall part of bamboo which easily to biodegradable when not in used.

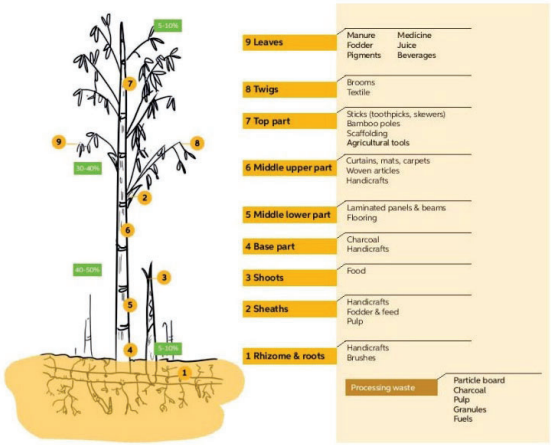

Fig. 1. Full utilization of the bamboo resource: the success factor of the Chinese bamboo industry

2) Bamboo as interior design element
Bamboo has a significant impact on interior design, which has its own commercial worth. This is further reinforced by its recognition as new material from diverse quarters, demonstrating that hybrid bamboo material may outperform other types of materials in terms of physical, mechanical, and aesthetic aspects. Various forms of hybrid bamboo-based goods are now available, ranging from ceilings, walls, floors, window frames, doors, and staircases to home decorative accessories.

Fig. 2. Bamboo Medium Density Fibreboard [5]

Bamboo-based particle / MDF boards (Figure 2) are made in the same way as their wood-based counterparts and can be used for furniture, flooring underlayment, and semi-structural panels. Rather than using whole trunks as raw material (as is common in the wood business), waste streams from other bamboo sectors, both preprocessing and end product manufacturing factories, are more frequently used as feedstock to manufacture these bamboo fragments. This research use bamboo as part of material and construction of saung (hut) to support wall, ceiling, and floor design for additional product values.

3 Methods

There are two stages used in this research. The stages are as follows:

3.1 Research Stages

The research method that used in this research is a qualitative method by conducting a literature study. The qualitative stage is carried out by online observations, literature studies, and conducting online observations through the official website and news. Then, to analyse the problem, this research conducts an interview with local village's community about the activities, unique products, and any relevant issues or challenges that the community and visitors of Cibarani village have faced.

3.2 Research Stages

The design stages of developing bamboo hut area collecting and obtaining some relevant sources, conduct design process, design development, and determine the final design through several design studies including design programming, design sketches, material, color, and other studies that relevant to design stages of this research.

4 Data Collection

4.1 Comprative Survey

This research conducted a survey at 3 locations: Sawah village, Jelekong village, and Saung Angklung Udjo (Angklung Udjo's hut)

Table 2. Comparative Survey

	Comparison		
	Sawah Village	***Jelekong Village***	***Saung Mang Udjo***
Location	Bandung, Jawa Barat	Bandung, Jawa Barat	Bandung, Jawa Barat
Activities	• Dining • Recreation • Swimming	• Puppet show • Painting • Exhibition	• Dance & Music performance • Selling Souvenirs
Use of Hut	To eat and relax	To exhibit and sell some paintings	To staging and selling souvenirs
			

4.2 Activities and Facilities in Buying and Selling Retail Activities

The ideal area for retail activities which is recommended to accommodate the activities of sellers in displaying and storing their products or merchandise is 3x3 meters. Meanwhile, the ideal size of a retail place is cover a minimum of 2x1.5 meters. Based on anthropometric data, the average human shoulder width is 60 cm, and the thickness of the human body when walking sideways is 30 cm. For aisle width based on observations and analysis in the field which is ideal for access pass and carry goods as well as persons with disabilities is 2.2 meters wide [6].

Focus on the physical experience, this bamboo hut determines on the display product and the path customer through the sequence inside the hut. Encouraging this kind of shopping behavior creating an immersive experience. Within retail store design, there are grid layouts, herringbone layouts, loop layouts, or free flow. The loop layout is particularly effective for creating a path for customers to follow through your store.

5 Result and Discussion

5.1 The Design Concept Implementation

The design focuses on the use of bamboo material in designing the display of Cibarani village's superior products in a bamboo hut. The design with a natural tropical style supports the concept used and adapts to the environmental conditions of Cibarani village which is an open area and close to nature.

1) Circulation and Layout

The product display will be placed on a circular bamboo hut with a diameter of 4 meters with a minimum circulation of people walking as wide as 60 cm, a standard table for displaying products measuring 120 x 60 cm and also custom furniture. The floor plan can be seen in the following image.

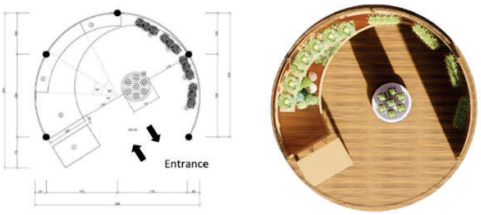

Fig. 3. Bamboo hut plan (Muliadi, E. J, 2020)

2) Floor Concept

In the design of the bamboo hut using a circular wooden plank as high as 10 cm as the basis of the hut. The bamboo poles which are the main supports for the display of this superior product will be plugged into the holes provided on the base.

Fig. 4. Floor concept implementation (Muliadi, E. J, 2020)

3) Wall Concept

The walls are made slightly open in accordance with the nature of the people of Cibarani village. The wall is also used as a means of display by using several accessories which are then attached to the wall. This is quite effective in saving space and making the walls more aesthetic. The attention of the visitors can be more focused on the superior products displayed on the wall. Because of its portable nature, this saung uses rolled bamboo curtains with a system like the counter barrier as a wall. This will make it easier for sellers when moving product displays from one place to another. The system in question is that the bamboo poles that support the saung are marked on 2 parts perpendicularly which will then be connected to a rolled bamboo curtain. One end of the bamboo curtain is tied playfully to one of the bamboo poles. While the other part will be used to hook the bamboo curtain from the other pole.

Fig. 5. Floor concept implementation (Muliadi, E. J, 2020)

4) Bamboo Shape as Design Concept

A series of shape study is also used as part of design process that focuses on the basic shape of bamboo. The shape of a tube. This form will be processed into several superior product display furniture and also applied to the plans and shapes of the bamboo hut. If the bamboo is cut diagonally/obliquely it will be shaped as in figure 4. The shape in figure 4 is used as an architectural form of bamboo hut (saung).

Fig. 6. Bamboo hut's shapes (Muliadi, E. J, 2020)

The bamboo segments can form angular curved lines and applied as decorative pattern on the saung's cashier table (Figure 7). By implementing curved lines and grooves on furniture, the design is expected to create a dynamic impression. The curved lines are also applied to the display rack (Figure 8).

Fig. 7. Cashier table (Muliadi, E. J, 2020)

Fig. 8. Display rack (Muliadi, E. J, 2020)

Bamboo material is also used as hanging display rack and furniture for planters. Below are the saung design that applies bamboo material for additional product values (Figure 9)

Fig. 9. Hanging display rack (Muliadi, E. J, 2020)

5) Furniture Design Concept

The furniture design concept is made with bamboo materials, such as table for cashier activity, display furniture and hanging shelves to support for product displays. It is expected that the use of bamboo material as supported display furniture would be benefit for additional values of local products.

Fig. 10. Furniture design (Muliadi, E. J, 2020)

6) Color Scheme Concept

The color concept for this bamboo hut applies natural, calm and natural colors inspired by bamboo and vegetables as represented of the superior product of Cibarani village (figure 10)

Fig. 11. Color scheme concept (Muliadi, E. J, 2020)

7) Lighting Design Concept

This bamboo hut display can be used in both indoor and outdoor areas, but the lighting used in both places is definitely different. For indoor exhibitions, the focus is on artificial lighting from downlights mounted on the roof. Downlights are used for even lighting and at the same time provide accents to the products on display. For outdoor exhibitions, natural lighting is the main point. The outdoor environment allows a lot of sunlight to enter the hut. The use of slightly exposed walls supports this natural lighting.

8) Air and Ventilation design concept

Ventilation is very important in a booth design, including saung. Therefore, in this design, several windows and ventilation are placed in the walls, so that natural ventilation can easily accessed the room. No additional ventilation is used because Cibarani village has a cool air condition during the day. For window coverings, this study applied PVC plastic opaque mica sheet curtains. This curtain is quite simple, easy to use, and store effectively. Installation of curtains will be hung on the hooks that have been provided on the ceiling. The two wooden supports for the ends of the curtains will be closed and tied during the sunny day. There is only needs to untie the knot and the curtain will open downwards during rainy days.

9) Sustainable design concept

For this study, the bamboo hut design applies the concept of sustainable design, durable, and environmentally friendly design. To implement the sustainable design concept, this study applied durable and environmentally friendly material, such as bamboo. Bamboo is also one of renewable material that growing fast, potential to be used as a zero waste material, and easily biodegradable.

6 Conclusion

This research aims to utilize bamboo material as a display of Cibarani village's superior products. The idea of using bamboo as a natural material narrowed down the concept of green design. Ergonomics and anthropometry are required for product evaluation. In addition to being functional, the design must also provide safety, health, security, and comfort for humans when entering the booth. The case study in this research is 3 bamboo hut designs for any other performance art or product display, which were then analyzed and compared to each other.

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