Exhibition center design in Bekasi with a Hi-Tech architecture approach

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Abstract. Indonesia as a tourist destination has the opportunity to develop MICE tourism potential (Meeting, Incentive, Conference, and Exhibition). Globalization and regional autonomy provide opportunities and challenges for development in each region. Each region is required to develop all the capabilities that it has both the value of comparative advantage (comparative advantage) and competitive advantage (competitive advantage). Bekasi City is a city located in West Java, has the potential as a gateway for international trade in West Java. Especially with the construction of 4,000 manufacturing companies and 21,000 expatriates in Bekasi. With this potential, it is possible for Bekasi City as a trade and service node nationally and even internationally. The Exhibition Centre is a container that functions as a fulfilment of the need for MICE activities that combine the functions of meetings (meetings and conferences), exhibitions (exhibitions), and recreation (incentive travel). Hi-Tech Architecture is a design concept that is interpreted as a flow of architectural style that leads to the idea of a modern architectural movement that exaggerates the structure and technology of a building [1]. High-Tech Architecture is an indicator of developments in the world, both in the field of technology and architecture. Bekasi City is one of the cities that is developing in West Java Province. Therefore, High-Tech Architecture was chosen as an approach to planning and designing an exhibition center in Bekasi City as a symbol that Bekasi is a developing city.

1. Introduction
Indonesia as a tourist destination has the opportunity to develop the tourism potential of MICE (Meeting, Incentive, Conference, and Exhibition). Increasing economic growth and security have encouraged local and foreign investors to develop in Indonesia, both as organizers and participants [1]. International MICE activities are proof of the belief that Indonesia has great opportunities in the tourism sector [2]. The existence of globalization and regional autonomy provides opportunities and challenges for development in every region. Each region is required to develop all its attractiveness, whether it has a comparative advantage (comparative advantage) or competitive advantage (competitive advantage).

Bekasi City is a city located in West Java, which has the potential as a gateway to international trade in West Java. With the developments of public facilities in the area such as the Courts Megastore in Indonesia, the Patriot Stadium in Bekasi City, and more than 4,000 manufacturing companies and 21,000 expatriates in Bekasi [3]. With this potential, it allows Bekasi City to become a trade and service hub nationally and even internationally, also can develop human resources [4].
The Exhibition Center is a forum that functions to fulfill the need for MICE activities that combine the functions of meetings (meetings and conferences), exhibitions (exhibition), and recreation (incentive travel) [5]. MICE activities in general consist of meetings and exhibitions. Meeting activities can discuss many things, especially regarding problems / problems that are developing. Exhibition activities also offer certain products or services that are tailored to emerging trends. The character of MICE tourism actors who always keeps up with the times is in accordance with the Hi-Tech architectural approach [4]. Hi-Tech architecture is a design concept which is defined as a flow of architectural styles that lead to the idea of a modern architectural movement that exaggerates the structure and technology of a building [6]. High-Tech architecture is an indicator of developments in the world, both in technology and architecture. Bekasi City is one of the cities that is currently developing in West Java Province. Therefore, High-Tech Architecture was chosen as a planning approach and planning for the center of exhibition and convention activities in Bekasi City as a symbol that Bekasi is a developing city. In addition, High-Tech Architecture is also expected to give the building an attractive appearance.

2. Purpose and objectives

2.1. Objectives

Objective for this research is as a communication medium for a group to discuss problems, present works / products, to exchange ideas and exchange information, provide a place to display goods / work products, to facilitate promotion for production company actors.

2.2. Purpose

Purpose of this research is to provide a forum for communication activities for each group or actor who needs it through the design of an Exhibition Center in Bekasi City, providing a place or container that can accommodate promotional activities or exhibitions in Bekasi City, increasing the relationship between producers and consumers due to direct interaction in the exhibition, and to improve the quality of tourism in Bekasi City by attracting or inviting many visitors from outside the city and the country, so that it is also a promotional event for the city of Bekasi.

3. Research methods

The study process used in the Design of the Exhibition Center in Bekasi with the Hi-Tech Architecture Approach is carried out by a research method that is quantitative-correlative analysis, which is to find and determine the correlation between the research variables. This method is in the form of descriptive exposure to the current phenomenon accompanied by literature that supports the theory used quantitatively, using descriptive methods that discuss the techniques of collecting, processing or analyzing and presenting the data set. Qualitative or correlative data analysis by conducting several stages through surveying the site and object locations to obtain data related to the design object. This mice building also uses High-tech buildings, with steel, aluminum and glass materials, combine with brightly colored braces, girders, and beams [7].

3.1. Data collection

The data collection methods used in data collection techniques are as follows:

- Survey / Observation
- Study of literature

3.2. Data sources

Data sources are divided into two, namely primary data and secondary data (Table 1). Primary data is primary data that is done is work in the form of field studies. Secondary data in the design are also important. One of them is literature study. The literature study used is a reference for all types of references such as books, journal papers, articles, theses, and other scientific works.
4. Land analysis

Table 1. Site analysis.

| Location Map                   | Existing Datas                                                  |
|--------------------------------|-----------------------------------------------------------------|
| Climatology                    | **Data**                                                        |
|                                | The sun moves from behind (East) to the front (West) of the tread.|
|                                | **Potency**                                                     |
|                                | The west and east of the site will receive a lot of light       |
|                                | **Obstacles**                                                   |
|                                | Buildings to the east will be hot in the morning; buildings to the west will be hot in the afternoon. |
|                                | **Solution**                                                    |
|                                | The shape of the building mass is made in a circular shape with the building positioned sideways or backwards to the entry of the sun. |
| Noise                          | **Data**                                                        |
|                                | High noise levels around the land are potentially at the Summarecon Bekasi landmark intersection |
|                                | **Potency**                                                     |
|                                | The inner area is not too noisy                                 |
|                                | **Obstacles**                                                   |
|                                | Noise will occur around the land and will affect surrounding activities. |
|                                | **Solution**                                                    |
|                                | The solution will be to make greening around the land that has the potential for noise, the presence of trees and vegetation will minimize noise and an acoustic system will be created in each room. |
| Environment View               | **Data**                                                        |
|                                | The view of the environment is from Bulevar Ahmad Yani West and Jalan Bulevar South. |
|                                | **Potency**                                                     |
|                                | The potential of this view makes the sides of the building more visible and easier to access. |
|                                | **Obstacles**                                                   |
|                                | The problem is that there are many trees that grow tall in the site at this time |
|                                | **Solution**                                                    |
|                                | The building's facade will be made more attractive, so that it becomes the center of attention and will be visited. |
| Road Circulation               | **Data**                                                        |
|                                | Road access around the land has 2 lanes, both on the Boulevard Ahmad Yani road and on the South Bulevar road. |
|                                | **Potency**                                                     |
|                                | The potential of this 2-way lane is that it is not too congested and makes it easy for buildings to be easily reached. |
|                                | **Obstacles**                                                   |
|                                | There will be confusion for the visitors when they first visit this building. |
|                                | **Solution**                                                    |
|                                | A main entrance and a second entrance will be made to make it easier for visitors to visit. |
Table 1. Cont.

| Wind direction     | Data                                                                 | Potency                                         | Obstacles                                                                 | Solution                                                                 |
|--------------------|----------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------|
|                    | The wind direction is from the northeast to the southwest.           | The northeast side of the building gets enough wind for air exchange | If you place the building backwards from the direction of the wind, it will be blocked from entering the wind. | The period of the building at least does not have its backwind direction. |

Achievement

| Data                                                               | Potential                                                                 | Obstacles                                      | Solution                                                                 |
|----------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------|
| On the site, the access in and out has not existed before.           | The potential of access to this achievement is that it can make access in and out of it from anywhere. | Since the road around the land is both a public access road, there will be a possibility of confusion for visitors when entering the building. | The solution to this achievement pattern is that the main entrance and second entrance must be given a communicative distinction and are easy to access. The yellow arrow is for Main Entrance access, while the red arrow is for service entry and loading dock. |

Greening

| Data                                                               | Potential                                                                 | Obstacles                                      | Solution                                                                 |
|----------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------|
| Initial conditions, the greening around the land has enough trees growing on the edge of the site to the surroundings. The trees are areca palm and date palm trees with a height of 3-5 meters. | The potential is that many trees have grown both inside and on the edge of the tread and are a little tidy on the edges of the tread. | The greenery has not been neatly patterned on the inside of the tread. | The solution is to maintain existing trees such as areca trees that have been neatly planted on the edge of the site. |

5. Conclusions and recommendations

The Exhibition Center building is located on Jl. Bulevar Ahmad Yani, RT.006 / RW.002, Marga Mulya, Kec. North Bekasi, Bekasi City, West Java 17142. Consists of the main building which is the exhibition center and meeting center as well as other supporting facilities. Building patterns and configurations that are relevant to the exhibition center building circulation system in general with the application of a Hi-Tech Architecture design. The concept of the group of buildings and spaces that he forms in this exhibition center is the concept of the façade that is the focus. The concept of this type of space features a facade concept in a building that has the advantage of being able to be moved by light or manual sensors made from aluminum composite panels like facade materials in general. The advantage of this technology is that the vertical façade fins can rotate 90° to the left and right to cover the direct sunlight entering the room. When at night the edges of this vertical fin can emit light from the LED cables that are attached from the bottom to the top of the building throughout the facade. This type will minimize the entry of excessive sunlight so that there is no excessive heat in the room.
5.1. Application of concepts in design
The exhibition center design is based on the theme of Architecture Hi-Tech concept. In this design concept, it will discuss the application of Hi-Tech architectural concepts and its combination with West Javanese customs, especially Bekasi (Figure 1-3).

- The mass of the building consists of a combination of rectangles and circles [8]. This form is taken from the form of Kujang. Kujang is a traditional weapon in Bekasi, West Java. Kujang began to be made around the 8th or 9th century, made of iron, steel and pamor materials, about 20 to 25 cm long and weighing about 300 grams. Kujang is a tool that reflects sharpness and critical power in life as well as symbolizing strength and courage to protect rights and truth. It becomes a characteristic, both as a weapon, agricultural tool, symbol, decoration, and souvenir.

- Shape expression shows the structure and material used. The structure used is a wide span, the use of exposed columns and the dominance of glass and steel materials.

- Harmonization of inner and outer space. Providing space for public interaction on the inside of the building that is open, open plaza as a communal / public space as well as a recreation area as well as an open exhibition space [3].

- A facade concept that can be moved by light or manual sensors made from an aluminum composite panel like any other facade material in general. The advantage of this technology is that the vertical façade fins can rotate 90° to the right and left to cover the direct sunlight entering the room. When at night the edges of this vertical fin can emit light from the LED cables that are attached from the bottom to the top of the building throughout the facade.

- Smart Building Utility Systems Communication Aspects. The communication system in this exhibition building is the use of an alarm that rings automatically in an emergency, information via speakers throughout the building and the use of a wireless internet network that connects to every user in the building as well as parking needs sensors that are connected between the basement parking area and the parking information screen at the door. enter the building.

- The layout of the exhibition room can be changed quickly by using the remote controller or manually and urban walkability connects the mice building and the outdoor exhibition [9].

![Figure 1. Side elevation.](image1)

![Figure 2. Indoor view.](image2)

![Figure 3. Outdoor view.](image3)
5.2. Suggestion
At the Exhibition Center, the Hi-Tech Architecture approach concept is designed so that the building gives a modern impression with the existing technology in the building, so that the building is able to give a good impression to every visitor and to the surrounding environment. In designing this exhibition center, the writer had difficulty obtaining data on the land situation and regional regulations of Bekasi as a design area. This is because the situation is still in a state of the Covid-19 Pandemic. That, I hope that every agency and institution will make it easier for final students to access data and so on.

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