

THE IMPLEMENTATION OF INTERACTIVE TECHNOLOGY DISPLAY IN JAKARTA WAYANG MUSEUM

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ABSTRACT

This day, people have less interest in visiting museums and galleries because of the unattractive display arrangements and the tedious activities entailed by only reading information. However, museums play a vital role in preserving and educating others about local culture through careful documentation and artifact preservation. The museum's display will be interesting and easily absorbed with the help of interactive technology such as Virtual Reality (VR), Augmented Reality (AR), 3D Web presentation, and sensory technology. This study aims to examine the implementation of technological innovations as well as various methods of interactive display exhibitions that can be used to add value to the interior design of the museum. This research method is descriptive qualitative research through collecting data by literature study and documentation from Museum Wayang under existing facilities. This analytical process was done to create data that can support implementing technology design in the museum. The design is focused on the reception lobby, exhibition halls, and souvenir shop area, with a touch of Javanese style as the origin presentation of Wayang culture itself. With the touch of technology, the modern and educational image of the museum can emerge more and make visitors interested in coming to the Wayang Museum.

Keywords: Display, interactive, museum, technology, wayang

1. PREFACE

Indonesia is a country known for its cultural heritage, with so many cultural and historical relics. One way to preserve them is by caring for and maintaining heritage objects with complete information so the Indonesian people can enjoy them and gain insight into the culture and arts of the past. The definition of the museum by the International Council of Museums, ICOM (2007) A museum is a non-profit, permanent institution in the service of society and its development that acquires, conserves, researches, communicates, and exhibits the tangible and intangible heritage of humanity and its environment for education, study, and enjoyment. [1]

Unfortunately, museum tourism has an average number of visitors per month in Indonesia, much lower than other tourist destinations. Based on the literature study, some facts about the problems in the museum can be presented, starting from the passive collection of objects presentation just by reading and looking at the museum collections and delivering less exciting information. The design of museums must be considered under the current theme so that the function of today's museums can develop along with the times. According to today's times, museum organizers must display collections that adapt to modernize and deliver information. Technology is acceptable for museums since it supports efficient and engaging learning experiences within art, history, and culture. Some museums in Indonesia still use supporting technology, for example, the availability of multimedia computers and digital back sound in some of their collection rooms. Kortbek, K.J., and Grønbaek, K. (2008) say that visitors indeed find it more interesting to visit an exhibition with interactive communication and that visitors will be more interested in visiting art museums in the future [2]. However, museums play a vital role in preserving and educating others about local culture through careful documentation and artifact preservation. This study aims to examine the

implementation of technological innovations as well as various methods of interactive display of exhibitions that can be used to add value to the interior design of the museum.

In today's era, accessibility in museums is associated with digital technology [3] that is visually appealing, interactive, and able to be brought into the museum space in new ways that may not have been thought of before (e.g., touch screen technology). In its presentation, virtual reality (VR), augmented reality (AR), 3D Web, and other technologies related to museum exhibitions have been developed. Several supporting devices can facilitate technology that works in concert with natural interactions with visitors. Today's technological developments have contributed to advertising, marketing, and entertainment. In this modern era, technology is experiencing rapid growth that affects aspects of human life. Technology development can provide convenience, comfort, and many benefits for achieving efficiency, effectiveness, and accuracy. According to Andanwert (2020), QR code features, VR, and audio display experiences can achieve interactive exhibitions through digital information. With interactive exhibits, visitors expect new and immersive experiences to help them memorize various pieces of information entirely and efficiently [4].

2. RESEARCH METHODS

This paper used a descriptive qualitative research method through observation of exhibition technology in the museum to find out the application of suitable and appropriate technology in the Wayang Museum to better facilitate the collection of exhibitions. According to Nana Syaodih Sukmadinata (2011, p.73), descriptive qualitative research describes natural and human-engineered phenomena, focusing on the characteristics, quality, and interrelationships between activities [5].

Study literature to obtain data on theories based on previous journals and documents, image documentation of Museum Wayang or another similar museum for comparison. A field survey was conducted to gather information about the actual conditions of the existing data, activities, and facilities, and an interview with Museum Wayang staff. The analysis method used in the study obtained an analysis of the data collected, such as documents, articles, and references to previous museum interior projects that also used technology assistance, that can be applied to the interior of the museum exhibition.

3. RESULT AND DISCUSSION

The Jakarta Wayang Museum is one of the historical museums that have been established since 1640, and it is located on Jalan Pintu Besar Utara No. 27-29, Tamansari Pinangsia, West Jakarta. Like other historical museums in the Kota Tua area, the Jakarta Wayang Museum is also a Dutch heritage building. The museum building was previously a place where collections of puppets and dolls from various parts of Indonesia, then Governor of Jakarta, Ali Sadikin, inaugurate this museum as a puppet museum on August 13th, 1975. Currently, the Wayang Museum is a museum under the Art Museum Management Unit of the DKI Jakarta Provincial Culture Service. The Wayang Museum has a collection of Wayang from various regions in Indonesia and abroad, including Wayang Kulit, Wayang Golek, Wayang Beber, Wayang Klitik, Puppet Revolution, Puppet Suket/toys, Paintings, Masks, Puppets, Wooden Sculptures, and Gamelan. [6]

The Wayang Museum's existence is for people who come to raise awareness of Indonesia's culture and conserve and preserve the Wayang [7]. As the purpose of research and study learning facilities for the community, the Wayang Museum was not built only for recreational purposes for tourists [7]. Jakarta Wayang Museum's job is to collect, care for, and protect various types of puppets and

historical values and present historical art objects to the community as information and evidence of Indonesian art and cultural history. The vision of the Jakarta Wayang Museum is to be a center for the preservation of Indonesian Wayang and puppetry and a tourist destination for arts and cultural education with international standards.

Figure 1
Museum Wayang Location



Source: Angelika, 2021

- Project : Jakarta Puppet Museum
- Function : Education, Recreation, Conservation
- Area : $\pm 3100 \text{ m}^2$; 2 floors
- Collection : 6,300 collections of various kinds of wayang and dolls from various regions in Indonesia and abroad.

Table 1
Visitors Type

No	Type	Description
1	Visitors	Visitors consist of various types of domestic tourists, foreign tourists, and students. The level of visitor density will be seen on weekends.
2	Worker	The museum manager, whose job is to maintain the continuity of activities in the museum so that it can run smoothly.

As the use of interactive exhibits, the method of presenting museum collections is intellectual by revealing information about the meaning and function of wayang with a thematic approach. A taxonomic system displays item collections in their respective classifications and groups. Interactive exhibits are a new way to present museum collections as more exciting and fun than very long narrative text reviews that will make it difficult for visitors to understand the exhibits' context.

Figure 2
Illustration About the Future of Technology in Museums



Source: Mansfield, 2020

Advances in technology have become very important in recent years to provide experiences for museum visitors worldwide. They started by giving immersive digital technology, directing visitors' journeys in the museum, technology with the support of various applications, and growing in the museum. Mansfield (2021) says some technologies are familiar in their use as supporting tools in museums [8].

(a) Wearables: Body-worn badges, wristbands, or cards to activate chips and other technologies to strengthen the connection between visitors and stories. Providing private links deepens visitor understanding and connects them with narrative content on a more profound level. For example, the RFID approach allows for the creation of personalized scavenger hunts.

(b) Augmented Reality/Virtual Reality: With Augmented Reality, exhibitions can seem alive with the appearance of exhibits in the museum in a new way so that visitors can see the virtual world of the museum right in front of them.

(c) Interactive Gesture Technology: Due to the current COVID-19 pandemic in all parts of the world and the increasing concern over the risk of infection, proximity, and touch sensor technologies are likely to gain high popularity. This technology is becoming cheaper, and its sensitivity and accuracy are increasing, resulting in more engaging visitor engagement.

(d) Mobile Technology: Museums' mobile apps are nothing new, but museums are now looking for ways to extend and integrate mobile technology for a more customized experience. For example, museums can offer immersive guided tours and AR experiences that enrich exhibit content using mobile technology. Moreover, mobile ticketing technology simplifies processes, minimizes queues, and offers touchless payment options.

(e) App GPS tracking systems: Museums use this technology to track the movement of visitors while they are inside the museum and to confirm how well the storyline is working. It is also adequate for visitors to better understand waiting times by detecting visitors who can access every museum area.

(f) LED / Laser Projection Technology: The museum uses lighting and laser projection technology to create an atmosphere that fits the museum's theme and creates a deep impression of the museum. Visitors can capture the imagination and feel deeply connected to the story with this unique laser technology.

(g) AR Selfie-Moments: With advances in digital projection technology incorporated into museum exhibits more frequently, personalized visits are becoming more common. In all aspects, this technology expands the range of opportunities in which visitors can engage and share in the museum's brand and mission.

(h) Virtual Tours: Future museums and attractions may need to allow for the expansion of off-site non-physical experiences. To that end, leveraging in-house technology and creating exhibition designs directed at virtual tours that can explain the interfaces of technology at home should be an integral part of developing a new museum design from the conceptual level to project completion.

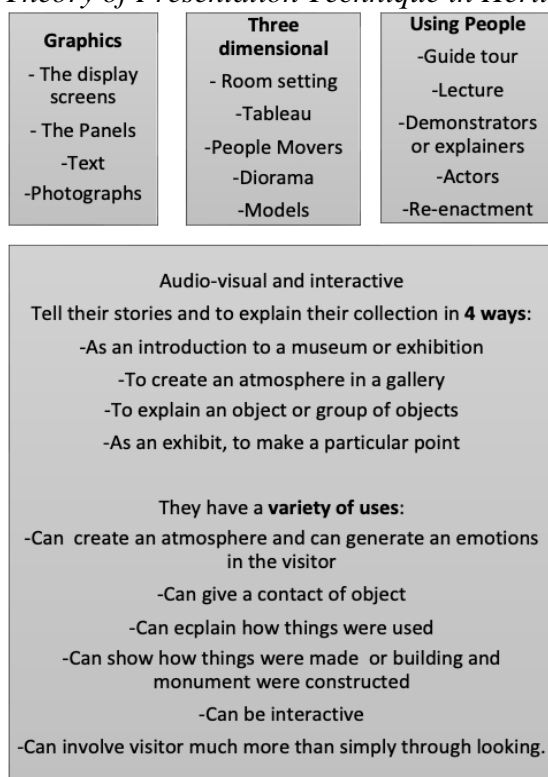
(i) Artificial Intelligence: The use of AI in museums can generate experiences for visitors in various forms. AI is very relevant to all forms of intelligent tasks in its use. AI can be in the form of the inside of an intelligent machine, or what is currently popular can be a humanoid robot used

to attract visitors with its intelligence. This AI robot develops many abilities, such as talking, making movements, and showing facial expressions. AI offers many unique skills to engage visitors in museums, such as helping answer questions, identifying, providing information, or creating an image through image patterns.

(j) Versatile Technology Exhibit Platforms: A good exhibition can adapt quickly to the continuity of the display and facilitate content flexibly. An arrangement that accommodates content flexibility and allows the display to change rapidly as the presentation evolves. Museums need more recent changes in updating the exhibition curriculum to focus on education, research, and special events. Leveraging remote programming technology offers museums and attractions the ability to be more flexible and responsive to new and diverse audiences. [8]

Figure 3

Theory of Presentation Technique in Heritage Exhibition



Source: Hashim, 2014

The theme for the interior design of the Wayang Museum is "Wewayanganing ngaurip," meaning "a picture of life in the Javanese language. The design will be shown a symbolic image of the life of the Javanese people and art related to the Wayang itself, that appears as a cultural tool in Java. The style used is the Eclectic Style, with a touch of Javanese ethnicity ornaments, combined with the help use of technology to enhance the modern and educational image of the museum.

Figure 4

The Use of Smart Table Technology in the Lobby



Source: Angelika, 2021

The design of Museum Wayang uses innovative table technology and scans barcodes in the lobby and reception area. In Indonesia, smart tables in museums have begun to be commonly used and are widely applied to every room. Smart tables can accommodate information and features that have been maximized to adjust the information contained in each collection. The use of this technology has brought a lot of change. Usually, object information in museums is presented in long narrative texts, and they take up too much space. Still, with this smart table, you can deliver a lot of information in one place efficiently.

Figure 5

Audio Display Experience

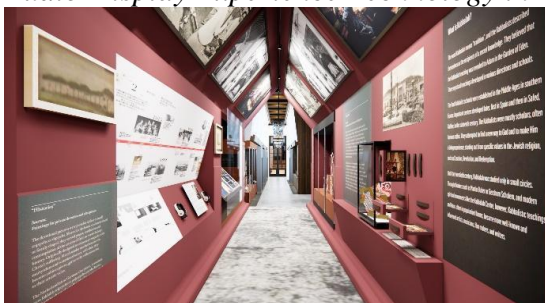


Source: Fixtpoint, 2016

Kortbek, K. J., and Grønbæk, K. (2008) mention in their study results that the users were quite enthusiastic about the audio spots as they found them to be an exciting method of gaining knowledge of the artworks [2].

Figure 6

Audio Display Experience Technology in Museum Wayang



Source: Angelika, 2021

In the initial exhibition in the corridor area, which is equipped with audio-visual technology to convey stories orally about the history of the Wayang Museum to complement the graphic designs and images displayed. Audiovisual experience technology is also used to facilitate the collection of the Wayang Museum, which contains the narrative of the Wayang Purwa story.

Figure 7

Sensor Technology Display Experience



Source: Angelika, 2021

The interactive display supports the Wayang Purwa collection, placed in a transparent acrylic jar. The interactive process occurs when visitors lift the acrylic jars from the display hole. After that, a motion sensor will automatically generate complete information on the LCD screen consisting of the information about the wayang, including the map of the origin area, shape, and characteristics. The laser projector is mounted in the vitrine area to project a similar background to the Wayang Theatre and help create a shadow movement of the spinning decorations that hanging on the ceiling. A spinning decoration consists of a wayang story presented by the wayang's shadow movement of that can generate an imitation of the wayang puppet show.

Figure 8

Interactive LCD Touch Screen Display



Source: Angelika, 2021

Information boards that are indispensable for explaining the collection of exhibits must be attractive and work efficiently. With the interactive LCD board, visitors can easily access all the complete information about collectibles.

Figure 9

The Illustration of VR and AR technology Museum



Source: Geekzilla, 2020

According to Craig, the use of Virtual Reality (VR) and Augmented Reality (AR) is currently being widely used in museums because it can support various fields such as entertainment, health, education, and others [9]. This technology is used by utilizing innovative tables and VR glasses that can be used so that visitors have a different experience with collectibles. Visitors can hold the collection in 3D visually with technology without holding the original collection object to prevent damage to the existing collection object. Related to Classen in his discussion, he said that museum objects are starting to break due to several factors, such as the behavior of visitors in holding collections [10], which are being overcome by using this VR technology.

Figure 10

The Use of VR and AR Technology in the Gamelan Exhibition Hall



Source: Angelika, 2021

VR technology can also use smartphone support to access object collections more efficiently. In addition, there is also an interactive LCD screen mounted in the vitrine area. Visitors can try wearing puppet costumes and masks on the LCD screen, which uses sensor technology to follow visitors' gesture movements.

Figure 11

Interactive Sound Instrument Technology



Source: Angelika, 2021

The gamelan exhibition area at the Wayang Museum was initially untouchable and playable. With the support of this interactive display technology, visitors who had never previously listened to a gamelan performance or had never played a gamelan instrument could identify the sound of each musical instrument. Interactive technology utilizes motion sensors installed on the ceiling and floor, so if a visitor reaches the sensor, it will produce sound from the musical instrument. Sensors of this musical instrument can be used simultaneously with other musical instruments so that visitors can freely create their own rhythms of music that exist on gamelan instruments.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis and discussion results, we can draw several conclusions, namely that the design of the Jakarta Wayang Museum supports the image of a modern and educational museum and that the design is focused on more modern educational and information media with the help of technology. With the rapid development of technology in the era of globalization in museums, the interactive method in museum exhibitions should be recommended to obtain museum exhibitions in the latest form. The use of interactive exhibits in museum design as information in digital form is supported by some technology such as LCD touch screens, VR, AR, interactive sound, and audio display experiences. With the technology applied, it can attract visitors to come to the Wayang Museum and have the convenience of exploring information and having a very memorable educational experience.

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