
Evaluation of Infrastructure Conditions and Needs to Drive Tourism 4.0

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ABSTRACT

Purpose: Today, the Covid-19 pandemic has significantly impacted the tourism sector. Bali must stay alive and exist during the pandemic as a province that relies on the tourism sector. As one of the tourist attractions owned by the Province of Bali, Arts Center Cultural Park has a characteristic as a place for performances to develop artistic talents. In addition, it functions as a forum for MSMEs (Micro, Small and Medium Enterprises), especially for the Balinese people. The era of tourism 4.0 encourages the transformation of tourism objects towards digitalization. Research that examines conditions, infrastructure needs, and development strategies is needed to transform it to face the tourism era 4.0.

Design/methodology/approach: This research method uses a descriptive qualitative method with interviews and literature studies.

Findings: The expected results of the research are infrastructure in the form of an open stage, a performance hall, exhibition building, management building, parking, and other utilities. The digitization program that can be applied is the use of Virtual Reality (VR) and mobile technology to face the 4.0 tourism era.

Paper type: Research paper

Keyword: Arts Center Cultural Park, Infrastructure Needs, Tourism 4.0, Virtual Reality (VR)

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I. INTRODUCTION

Art is an integral part of the history of human civilization that cannot be separated from its development. It is closely related to major aspects of history, religion, economy, and politics. Social values and patterns of people's lives demand convenience in fulfilling the needs of art. The emergence of the human desire to watch performances performed by other people, and the willingness of artists to be seen and perform their work, has been felt like an intuitive and spiritual need for a civilized and cultured society.

Art in Balinese society is a complex of elements that seems to be favoured by the people, so it looks as if it dominates the whole life of Balinese people. The Arts Center was built to preserve the arts and local wisdom of the Balinese people. It must be recognized that the culture and local wisdom possessed by an area can be a leading tourism potential (Rahmi, 2016). In addition to local culture and wisdom, it is also used as an educational tour. Education is all planned efforts to influence other people, whether individuals, groups, or communities, to do what is expected (Atmaja et al., 2021).

Of course, each region is interested in promoting tourist attractions because it can move the local economy that is populist. Many factors influence tourist attraction, so identifying each element becomes important to study. It is because the development of each aspect has a long-term effect (Adi & Saputro, 2017). The Arts Center has its charm for visitors with its traditional Balinese architectural style.

In recent years, the Coronavirus has considerably impacted the tourism sector. Bali must stay alive and exist amid the pandemic as a province that relies on the tourism sector. In 2019, the number of visitors to the Arts Center reached more than 2 million people, of which around 1.7 million were PKB (Bali Arts Festival)

visitors. Then, the number of visitors was only approximately 15 thousand people before it was closed due to the pandemic in early 2020.

The increasing number of positive confirmed cases of Covid-19 has prompted the government to reduce the number of spreads. It follows Permendagri Number 20 of 2020, concerning the Acceleration of Handling Corona Virus Disease 2019 in Local Government Environments. It is expected that immediate, precise, focused, integrated, and synergistic steps between local governments accelerate the handling of Covid-19 (Kemendagri 2020).

The additional policies are intended to prepare the environmental carrying capacity so that tourism activities can continue to run conducive. The new normal momentum is the right time to start taking steps to improve the economic downturn.

Today, industry 4.0 has developed, which must also be adapted by the tourism industry. The term emerged and originated from the government, professionals, and practitioners. Unfortunately, developed among academics, Smart Tourism and Smart Destination have produced more research than Tourism 4.0. The Industrial Revolution 4.0 has implications for various aspects of being all digital. It covers the Internet of Things (IoT), basic cloud computing, big data, 3D printing, virtual reality, augmented reality, and artificial intelligence (AI) (Firmansyah et al., 2021). In the current era of industry trends, the diversity of tourist attractions can be adapted to the times and technology (Rogerson & van der Merwe, 2016).

Technology can contribute to business expense savings (cost reduction). Tourism service providers can save time and expenses from geographical barriers with the internet. The increasingly fierce competition makes identifying all tourist attraction factors important (Adi & Saputro, 2017). It is necessary to analyze the readiness of infrastructure at the Arts Center and recommendations for needs and implementation strategies. It is expected that it can continue to exist to preserve and develop Balinese arts to face Tourism 4.0. Infrastructure is the main capital with a very strong influence on regional development.

Several studies have been done previously related to evaluation and infrastructure needs to encourage Tourism 4.0. The research conducted by Wulanningrum & Jayanti (2016) entitled Evaluation of the Existing Condition of the Tambak Lorok Area for applying the Minapolitan Concept. The results were obtained using the Minapolitan concept covering sub-agribusiness, cultivation, downstream, and support, which focuses on improving the quality of the production site. In the aquaculture sector, it is emphasized to maximize the potential of existing marine products through superior products and better processing of aquatic products. Research conducted by (Reza et al., 2018) is entitled Study of Tourism Area Infrastructure Development (Case Study in Kastoba Lake, Bawean Island, Gresik Regency). The research results explain the high diversity of vegetation and preserving the natural environment around Lake Kastoba. In addition, it is necessary to improve and add tourism facilities and infrastructure so that investors are interested in investing. Research conducted by Aldianto et al. (2018) entitled Development of Science and Technopark in Facing the Industrial Era 4.0. The results obtained recommend the development of Science and Technopark in Indonesia.

Based on the phenomena and previous research that have been described, this research will examine the evaluation of the conditions and infrastructure needs to encourage Tourism 4.0. Based on the background described above, this research has the following objectives: 1) analyzing the condition of infrastructure at the Bali Art Center Denpasar, 2) knowing the infrastructure needs in following changes in the tourism industry, and 3) providing recommendations for realizing infrastructure needs in the face of changing eras.

A. Concept and Theory

The concept of this research is descriptive qualitative by conducting literature studies, field surveys, identification, and analysis. The research was conducted by analyzing the problem, looking for a literature review, and the data collection process. Data is divided into two types, namely primary and secondary data. The next stage is to identify the condition of the infrastructure, then analyze the infrastructure requirements, whose results are strategies and recommendations. The design of this research is presented in the following figure.

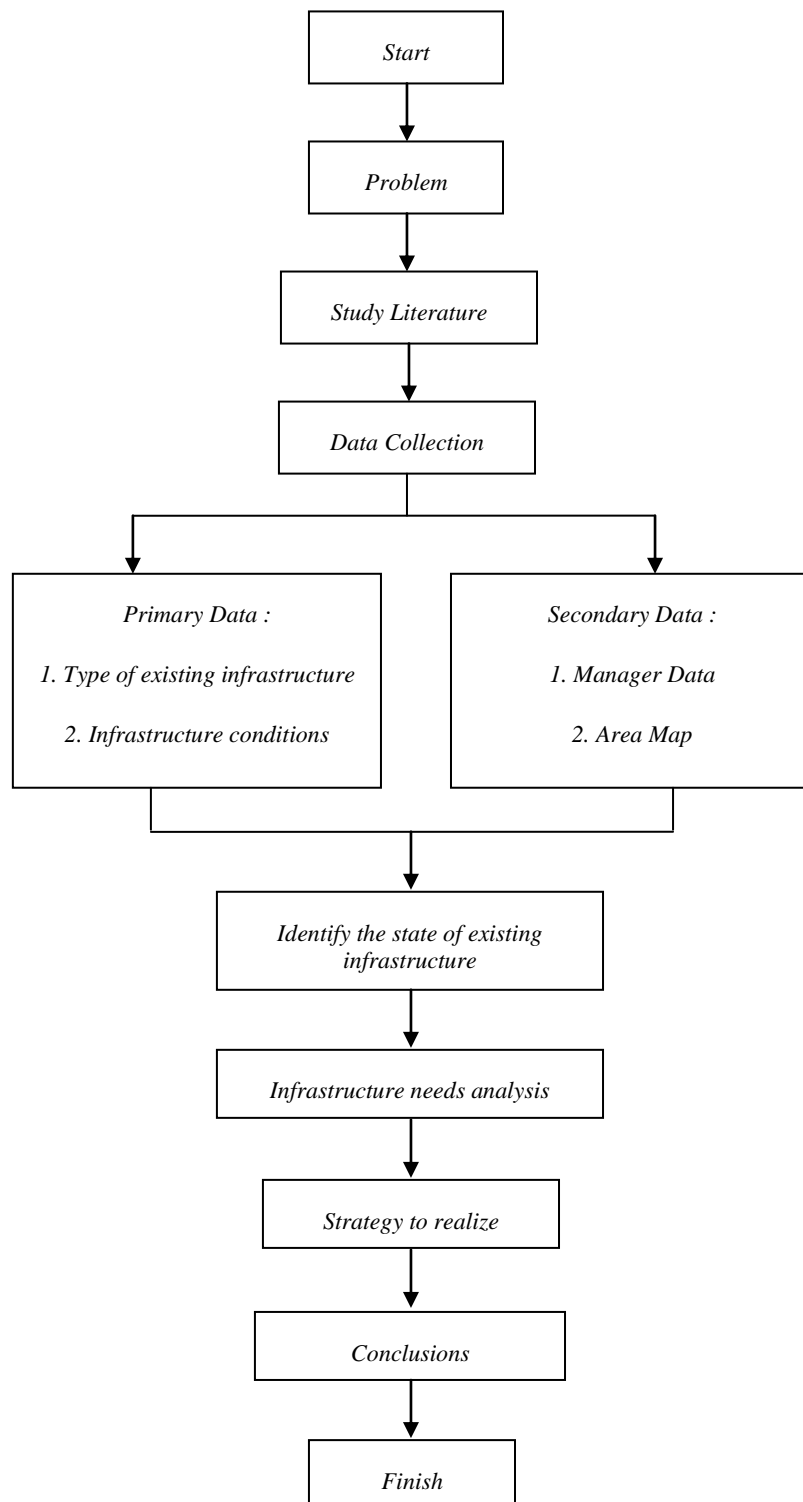


Figure 1. Conceptual Frame

(Source: Data processed in 2022)

Figure 1 is a conceptual framework that explains the flow of hypotheses between variables and their status variables.

1. Industry 4.0

The concept of Industry 4.0 was first introduced in 2010. It is when the German Federal Ministry of Education and Research urges to identify high-tech trends and their impact on society. At this time, Industry 4.0 begins, and new trends occur in various industries.

2. Virtual Tour

Virtual Tour is part of Virtual Reality technology. It is also called a panoramic tour. It is a simulation of a place, usually consisting of a collection of 360-degree photos, panoramic photos, a group of images connected by hyperlinks, or videos. It can also use other multimedia elements such as sound effects, music, narration, and writing (Yuliana & Lisdianto, 2017).

II. METHODS

The research location was conducted in the Arts Center area of ± 5 hectares. The following image is a map of the research location.

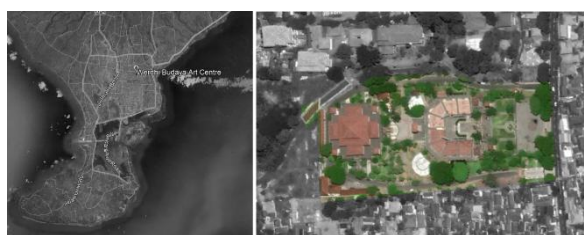


Figure 2. Research Location

The data collection method used is direct field observation with managers regarding the condition of infrastructure and the needs and readiness of infrastructure to face the tourism era 4.0. It uses quantitative data on the type and amount of infrastructure, state of infrastructure, and management data.

Sources of data used in this study are primary data and secondary data. Primary data is obtained directly with photo documentation techniques for infrastructure conditions and interviews with Arts Center managers. Secondary data was from other parties, such as the Department of Tourism and the Management of the Art Center Area. The data obtained from the agency are management data (HR, Infrastructure, and Funding) and tourist visit data. The following picture is documentation of data collection activities.



(a)

(b)

Figure 3. (a) Infrastruktur Conditions and (b) Implementation of Data Collection

The data analysis technique used in this research is qualitative and descriptive analysis. Qualitative analysis is a research procedure that produces descriptive data in written and spoken words from interviewees. The descriptive analysis carried out explains the condition of the existing infrastructure and then analyzes the infrastructure needs. From the results of the analysis of infrastructure needs, an analysis is carried out to obtain a strategy to realize additional infrastructure in terms of funding and other methods.

The type of research used is a literature study. The literature study method is a series of activities related to collecting library data, reading and taking notes, and managing research materials.

III. RESULTS AND DISCUSSIONS

A. Art Centre Infrastructure Conditions

The Bali art center was established to be a place for art performances and a place to develop the artistic talents of the Balinese people. It is where the Balinese arts festival is held every year from June to July. This festival started in 1979, with its opening held in front of the Bajra Sandhi Monument. All districts in Bali attend this festival by displaying an art parade that is the hallmark of each. What is unique is that both gamelan and traditional clothing have their differences.

The government built supporting infrastructure in the form of a performance building, an open stage, and an exhibition venue to support arts and cultural activities. Here is the condition of the infrastructure.

B. Open Stage Conditions

The open stage, the main performance area, is the Ardha Candra Stage. The name has a meaning, namely "Ardha," which means half-circle, and "Candra," which means moon. Ardha Candra has the same meaning as a horseshoe because it is a semi-circle. The stage has a building area of 7,200 m² with an audience capacity of approximately 7,000 people. It was inaugurated by the Minister of Education and Culture of the Republic of Indonesia, Sharif Thajeb, on April 14, 1997, and is divided into the upper and lower floors. It is used for colossal performances, entertainment, drama gongs, etc. The Kurung Temple, which adorns the stage where the performance is located, is for the entry and exit of performers. Ardha Candra's set is currently in good condition and well-maintained. The following picture shows its condition.



Figure 4. Ardha Candra's Stage Condition

C. Building Conditions

The construction of the Bali Provincial Cultural Park complex takes the story from the Mount Mandara Giri Cycle. Each building and its architecture is taken from the character. Everything related to the level tells of the struggle for Tirta Amerta (water that carries immortality, if you drink, it will not die) between the gods and the giants on Mount Mandara Giri. For example, in the carving of the stairs in the Ksirarnawa Building, opposite the Ardha Candra open stage, there is Naga Basuki, who also plays a role in the story. This building is a closed stage commonly used for performances, seminars, conferences, and other meetings with a capacity of 525 people and a building area of 5,500 m². The name Ksirarnawa comes from Sanskrit, which means the sea of milk. The building consists of two floors, namely the upper floor, four empty halls in each corner, and the ground floor, which is used for activities such as exhibitions and offices. There is a pool as a decoration that adds to the cool atmosphere in the middle. The following picture shows the condition of the Ksirarnawa building.



Figure 5. Ksirarnawa Building Condition

D. Parking Condition

Parking is an important infrastructure in an area. In the Taman Budaya Arts Center area, the space for parking is less. It is proven that the Bali Arts Festival uses the road as a parking area. Parking in this area is used as public parking and management. The following picture shows the distribution of the parking area and its designation.



Figure 6. Parking Conditions and Designations

E. Landscape Conditions

The landscape arrangement has a garden concept with shade trees that have been planted since the beginning of development. The condition has been arranged with good maintenance. The following picture shows the state of the landscape.



Figure 7. Landscape Conditions of the Arts Centre

F. Utility Conditions

Other supporting utilities include signposts, trash cans, lighting, and roads. The signage and size information seems lacking and not visible to visitors. Road conditions in several areas were damaged, and for the placement of trash bins were placed at the exit gate. The following picture is the utility condition.



Figure 8. Directions



Figure 9. Road Conditions



Figure 10. Trash Condition

G. Infrastructure Needs 4.0

The era of the tourism industry 4.0 demands that tourist objects or destinations transform digitally. Developed countries such as China, Korea, and Japan have implemented the concept of tourism 4.0 without compromising the cultural and natural conditions of the object. The literature study results show several examples of infrastructure 4.0 that might be applied to the Arts Center area. The entry of tourism in the 4.0 era indirectly makes the economic sector run and has the potential to develop in a direction that can support tourism needs at the Arts Center (Prabawa et al., 2019).

H. Virtual Reality (VR)

Virtual reality is a technology that allows users to interact with the environment in a virtual world that is simulated by a computer. Users feel they are in the background. According to the American Libraries Association, Virtual Reality is a computer-generated image simulation or entire environment that can be experienced using specialized electronic equipment. It allows users to be present in an alternative setting, such

as in the real world, to virtual three-dimensional (3D) objects and information with additional data such as graphics or sound.

One of the promotional products with a different perspective is Virtual Tour-based technology. It is a simulation of a place, usually consisting of a collection of 360-degree photos, panoramic photos, a group of images connected by hyperlinks, or videos. It can also use other multimedia elements such as sound effects, music, narration, and writing (Yuliana & Lisdianto, 2017). The technology will produce promotional products that have different attributes. The difference in product attributes is felt when a user experiences immersion or a feeling of being in a virtual world to be part of that world. In other words, an effective Virtual Tour makes users unaware of their real surroundings and focus on the situation in the virtual world. A user must be able to explore whatever appears in the virtual environment and switch perspectives seamlessly to create effective immersion. So, users can see from various points of view based on their current viewing position (Wulur et al., 2015).

In tourism 4.0, Virtual Reality has a very big role. The visible trend is that tourists are starting to show great interest in this technology. It is in line with tourist attractions that are starting to use this technology as an artificial tourist attraction instead of an attraction in real reality. For example, in Guizhou, China, a theme park offers the largest Virtual Reality Entertainment. Several airlines, such as Qantas, have also launched programs featuring virtual destinations such as Kakadu National Park, Great Barrier Reef, and Hamilton Island for first-class passengers.

The Virtual Tour concept can be offered on the Arts Center website in the current pandemic era. Visitors who have not been able to come to the location can enjoy the show and the atmosphere as it is in the original. The following picture is a pre-design of using Virtual Tour.



Figure 11. Pre-designed Display of the Taman Budaya Arts Center



Figure 12. Directions Display



Figure 13. Product/Service Description Display

IV. CONCLUSIONS

A. Conclusions

Based on data collection, site surveys, and literature studies conducted, several things can be concluded, namely: 1) The existing infrastructure at Taman Budaya Arts Center includes an open-air performance stage, performance hall, exhibition building, culinary corner, parking, and other utilities. 2) The condition of the existing infrastructure in the Taman Budaya Arts Center area is well maintained. Still, it requires improvement in conditions, either in repairs or upgrading of existing facilities. 3) The need to adapt to the tourism 4.0 era demands that tourist areas transform into the digital era. Several technological developments that can be applied include virtual reality (VR), artificial intelligence (AI), mobile technology, and digital shows. 4), Adequate digital infrastructure is needed as a medium-term target to improve existing infrastructure to compete in the tourism 4.0 era. For short-term targets, it is necessary to increase parking capacity by building multi-story parking infrastructure as a strategy to solve the problem of limited land. 5), It requires funding from the government or cooperation in CSR with tourism companies in Bali Province to improve infrastructure.

B. Physical Infrastructure Recommendations

The main infrastructure needed is the availability of indoor stage facilities equipped with adequate multimedia facilities to make virtual performances. Another important facility for the short term is the availability of parking spaces for PKB events. Multi-story parking can be a solution if there is no land available.

C. Non-Physical Infrastructure Recommendations

Funding schemes are needed to adapt in the era of tourism 4.0 because digitalization requires high costs for the short and medium-term. Funding can be done with government funds to provide a cultural platform or a funding scheme from CSR for tourism companies in Bali Province.

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