CONCEPTING VIRTUAL TOUR USING PANORAMIC PHOTOGRAPHY AS TOURISM PROMOTIONAL MEDIA FOR THE MAIMUN AREA, INDONESIA

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ABSTRACT

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Indonesia has many cultural heritage sites, such as the Maimun area in Medan, North Sumatra, with the potential to become tourist destinations. This area is a historical site designated as a cultural heritage and has attracted the attention of investigators due to the urgency of developing a Virtual Reality (VR)-based tourism promotion medium. The option to develop a virtual tour as a technology-based tourism promotion allows information to be packaged in a more informative and interactive manner. Therefore, this research aimed to describe the principles of panoramic photography in conceptualizing a virtual tour to build user understanding while enjoying 360-degree panoramic visualization. Quantitatively, questionnaires were distributed to young people as respondents to determine the views on the cultural value potential of the Maimun area. Qualitatively, the analysis of the virtual tour concept applied landscape photography genres and compositional theory to establish depth and direct viewer attention through perspective. The results showed that the conceptualization of a 360-degree virtual tour using panoramic photography adopted a variety of high-angle and eye-level shooting methods. This was carried out because the concept was necessary to show details of the exterior and interior of buildings, ornaments, park areas, monuments, and public spaces. Meanwhile, variations applied one-point, two-point, and three-point perspectives in a balanced manner. This research was expected to serve as an academic reference for designing tourism promotion media within the concept of a 360-degree panoramic virtual tour to transmit cultural messages, while supporting the development of creative economic products.

Keywords: Indonesia; Maimun area; panoramic photography; virtual tour; tourism promotional media

1. INTRODUCTION

Photography is often defined as the activity of painting with light. This artwork is considered a simulation of reality. In the past, the advent of photography threatened the existence of realist and naturalist painters, who were skilled at representing the realities of everyday life. However, photography became a tool for sharpening the precision of paintings that require fine detail (Mathar, 2021). The art of photography is advancing with the support of digital technology. Creativity is also widely applied in various media trends, including virtual tours using 360-degree panoramas.

A 360-degree virtual tour is an interactive simulation of a physical location that allows users to explore. This virtual view is the result of manipulating an on-screen display, such as using a mouse or smartphone. These virtual tours are created by combining a series of 360-degree panoramic photos that are spliced or encoded into online software to create an immersive experience (Istita & Suroyo, 2021). Therefore, 360-degree virtual tours are often considered part of the Virtual Reality (VR) experience.

VR is a unique experience for users to explore and interact in real-time with a virtual world, transcending the limitations of traditional media and flat screens. The use of VR technology allows users to experience emotional and sensory experiences (Zheng & Feng, 2024). Visualizations in VR are gaining popularity and are widely used in games, education, entertainment, retail, and tourism promotion. The application of panoramic photography to technology-based information media allows messages to be transmitted beyond documentation and becomes art that blends aesthetic elements.

Fathurrohman and Sari (2021) stated that photography's strengths included the ability to address cultural challenges, particularly through realistic artistic visual excellence. In today's era, art that reflects time is open and adaptable to the advancement of technology. This view supports the photography's capacity to document cultural dynamics accurately.

VR-based games and entertainment are widely available in shopping centers. Meanwhile, VR-based information media are increasingly being introduced in literacy centers and have become a subject of scholarly inquiry in academic circles. Huda and Mustagfirin (2019) analyzed VR-based information media for campus introduction. The results showed that a 360-degree panorama-based virtual tour website facilitated the general public in obtaining information about the academic environment. Other previous research, including virtual tour archives with 3D models for historical buildings, has been conducted by Sangmanee and Suwanwerakamtorn (2023) from Khon Kaen University, Thailand. A lightweight WebGIS platform was developed as a web map service for publishing and serving information on cultural tourism sites in Pattani province, Southern Thailand.

The virtual tour concept for historical and cultural tourism remains limited. Promotional media about historical areas are packaged as general information found on various social media platforms, such as a 360-degree travel-themed video on YouTube about the Al-Mashun Grand Mosque, a tourist destination in the Maimun area, by YouTuber Arieb Poenya (2022). Despite the appeal of this 360-degree YouTube video, the number of viewers remains low. Therefore, more engaging and interactive media is needed to promote the Maimun area.

The Maimun area has attracted attention because the historic location is a potential tourist attraction for virtual tour-based tourism promotion media. Medan is Indonesia's third-largest city after Jakarta and Surabaya and serves as a gateway to western Indonesia. Based on the Decree of the Mayor of Medan, issued in 2022, the Maimun area has been designated as a cultural heritage site and is a potential historical area for tourism. Most of the tourist attractions in the area include ancient buildings, mosques, palaces, parks, monuments, museums, and trade centers. In the long run, this area is important because Medan is projected to become a modern, advanced, prosperous, just, and religious metropolis (Sagala, 2024).

The use of virtual technology has become urgent in the tourism sector, particularly in planning and producing more engaging and interactive tourism promotional media. Tourism promotional media that can promote tourist interest can indirectly impact national economic growth, particularly in the tourism sector. This is stipulated in the Law of the Republic of Indonesia No. 10 of 2009 concerning the presentation of tourist attractions through media (Wardani et al., 2019a).

Based on the description above, this research focuses on the need for virtual tour-based tourism promotional media using panoramic photography. In this context, virtual technology can allow users to experience real-world simulations in three dimensions with 360-degree panoramic visualizations. However, some users do not realize or understand that the visualization is supported by the art of photography, particularly in presenting panoramas in the visual concept.

Hartel and Thomson (as cited in Wardani et al., 2019b, p. 186) stated that communicating messages through photography was similar to transmitting thoughts using images. Images captured by the sense of sight enhance understanding and knowledge, as well as allow users to pay closer attention, arouse curiosity,

facilitate recall of events, and build imagination. The art of panoramic photography or the visualization of vast natural landscapes through virtual tours becomes a cultural reading in the context of tourism promotion media for historic areas.

Cultural reading is the result of human activity that is constructed through a combination of meaningful signs. Swaffar (1986) defined cultural reading as the literacy of a culture with a historically and geographically identifiable infrastructure, consisting of language, artifacts, and institutions. The surface of infrastructure shows consistent patterns that express regularities in the underlying systems of thought. Cultural reading analyzes the visible surface structures and signs in a culture, as well as understanding the underlying configuration of meaning.

In anthropological research, the use of the camera can function as a context-inducing device, enabling users to better understand the perception of culture and the interpretation of the concept through the power of images (Otto et al., 2018). Photographic works allow readers to analyze and understand various aspects of human life and society. In this sense, cultural reading is related to aesthetics and culturally relevant communication.

The understanding of society is crucial since communication actions begin with the concept of culture to produce design works with the capacity to accommodate the society (Yudhanto et al., 2023). This can be achieved by building a visual narrative that suits the audience's needs. A non-technical camera usage strategy is also needed, such as selecting the right photography genre and shooting angle. Accordingly, this study asks: How can the principles of panoramic photography be applied to the virtual tour concept as promotional media for tourism in the Maimun area?

This research aims to describe the principles of panoramic photography in the concept of virtual tours, which can contribute to building user understanding when interacting with three-dimensional images. As a cultural heritage, the Maimun area has seven tourist areas spread across the districts, namely the Mosque City area, Maimun City, Red Market, East Red Market, Sei Mati, Suka Raja/Medan City, and Medan Maimun. Several main icons are located in the Medan Maimun and Medan City districts, such as the Maimun Palace and the Al-Mashun Grand Mosque. However, this research focuses on the application of panoramic photography art to show the potential of tourist attractions in the concept of virtual tours using websites.

The discussion of panoramic photography in the concept of virtual tours for tourism promotion media in the Maimun area is expected to be an academic reference for the development of creative economy products. This is also in line with the mission of Asta Cita Prabowo-Gibran to promote national independence through creative economy products. The development of the creative industry sector is consistent with infrastructure development, including the needs of international-scale tourism.

2. LITERATURE REVIEW

Panoramic photography is a part of the landscape genre. According to Wahyuni E and Maulidya (2022), landscape photography is the depiction of scenery seen from a specific vantage point. Even though scenery is the primary subject of a landscape photograph, the concept can feature urban landscapes, office buildings, cityscapes, architecture, and candid street scenes.

The discussion of the art of photography places the subject as a panoramic view of a region. In the Great Dictionary of the Indonesian Language, a panorama is defined as a vast and open natural landscape. To sharpen the view and explore the beauty of the panorama, shooting methods use high-angle and eye-level techniques (Bonafix, 2011):

a. High-angle refers to taking pictures from above an object, lower than a bird's eye view, to emphasize certain elements more artistically.

b. Eye-level refers to taking pictures in a position parallel to the eyes in a horizontal space. In this context, the image looks more natural with minimal distortion.

The use of the methods attempts to visualize the details of a scene within a wide image field. This is important for panoramic photography to combine multiple shots into a single focused image.

The Rule of Thirds is used to guide viewer attention in a shot. This theory is concerned with the visualization of the photo concept into an imaginary grid of thirds. The division produces an image plane in three equal and proportional parts that form four points of intersection horizontally and vertically. The photo object is placed as the center of attention, including imaginary lines drawn to accompany the focus through the four points of intersection (Wardani et al., 2019c).

In this composition of imaginary points, objects can be placed considering the shooting for impact aspect. According to Block (2021) in the book *The Visual Story*, shooting for impact is the process of capturing images that use contrast and affinity. Contrast creates differences in the visual elements, increasing intensity to draw the viewer's attention. Meanwhile, affinity focuses on balance that creates overall harmony.

In shooting for impact, there is a planned creative concept, where the effects of the shot require consideration of perspective. Block (2021) argued that images could appear three-dimensional when viewed on a flat and two-dimensional screen. As a three-dimensional illusion, this visualization is called deep space. Furthermore, deep space provides the viewer with the visual experience of seeing three-dimensional height, width, and depth. Viewers also see depth on a two-dimensional screen due to the presence of cues. The cues are visual elements that create the illusion of depth in the form of perspective. In this context, perspective is divided into three basic types, namely one-point, two-point, and three-point perspective. The presence of depth and perspective creates an immersive experience when using VR technology. This technology allows users to visualize the real world or space by interacting with surrounding objects to create a virtual environment (Marzuki et al., 2024).

3. METHODOLOGY

This research was based on the field of photography in the context of virtual tour-based tourism promotional media, which showed 360-degree panoramic visualizations to create a virtual experience for viewers and promote tourist interest. A combination of quantitative and qualitative methods was adopted using a photography genre and composition theory. Quantitatively, this research used a survey method to determine the views of the younger generation on the tourism potential of the Maimun area as a historical and cultural heritage. This was carried out to understand the preservation and promotion of the Maimun area through technology-based information media. Survey methods were widely used in social science research to provide efficiency in collecting representative and valid data from a wide population, and in a relatively short time, including using questionnaire instruments (Kurniawati & Rindrayani, 2025). The survey results provide an overview of local public perceptions in the form of a public opinion survey, while also aiming to determine the views of local people on the potential of virtual tour-based tourism promotion media.

The population was determined within a university environment, specifically students majoring in computer engineering, informatics, and multimedia graphic engineering technology, and taking into consideration the qualifications and knowledge of the research area and virtual technology. The sample used a purposive sampling method, and the respondents were selected according to the established criteria.

Data collection through questionnaires was distributed to 150 respondents aged 18 to 40, who worked as students and lecturers. Respondents were active on social media, constantly working with computers, and knew the Maimun area due to living in Medan. The questionnaires were compiled using a Google Form link and distributed through WhatsApp groups. The data collection instrument was a questionnaire with a combination of closed-ended questions using a Likert scale. Qualitatively, the analysis used the principles of panoramic photography, particularly in the landscape genre, and the Rule of Thirds composition theory. In the landscape photography genre method, the analysis referred to two primary methods required for the virtual tour concept, namely high-angle and eye-level. The principles of Deep Space and Focus of Attention were used in the Rule of Thirds composition. The analysis adopted photographic methods to show the occurrence of 360-degree panoramic visualization and the virtual tour concept. The following diagram in Figure 1 describes the research method.
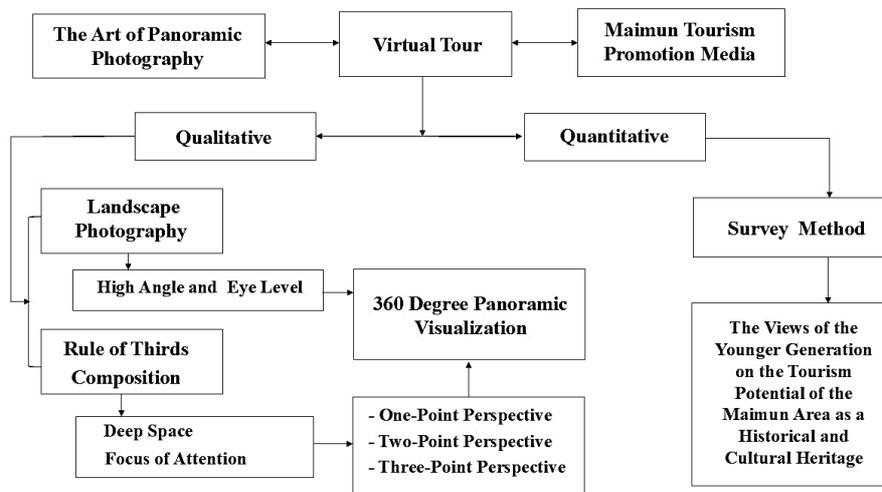

Figure 1: Qualitative and quantitative analysis methods

4. RESULTS AND DISCUSSION

4.1 Survey results

Globalization, including the presence of foreign cultures and the demands of modern development, often threatens the existence of historical buildings and artifacts, as well as local cultural wisdom. This influence must be anticipated by developing various information media about cultural heritage sites with tourism potential. Furthermore, the younger generation must be allowed to participate in various national issues to encourage a greater appreciation for the nation's culture.

This research considers the importance of the perspectives of young people, specifically those currently studying and living in locations with historical tourism potential, in contributing to the perceptions of cultural heritage destinations such as the Maimun area. Including young people in local cultural activities and education can strengthen heritage awareness/preservation. The knowledge of young people is directly proportional to the cultural heritage in the environment (Riswan, 2024).

The results of quantitative data with a Likert scale show that respondents in the city of Medan view the Maimun area as having an attraction for the younger generation. The responses were distributed as follows: 18% strongly agreed (28 respondents), 49% agreed (74 respondents), 20% were undecided (31 respondents), 9% disagreed (14 respondents), and 2% strongly disagreed (3 respondents). The combined proportion of respondents who strongly agreed and agreed was 68% (102 respondents), showing that the younger generation continues to regard the tourism potential of the Maimun area as important. However, 48 respondents (32%) were undecided or disagreed. The perspectives of the younger generation toward historical heritage tourist destinations are gradually changing.
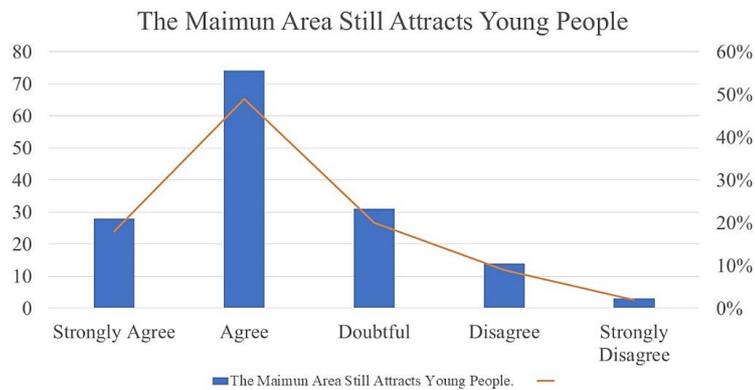

Figure 2: Attrctiveness of the Maimun area for young people

Quantitative data shows that the younger generation considers the need for visual technology-based promotion media to be more interactive, specifically to support the tourism potential of historical areas. According to Figure 3, 53% strongly agreed (79 respondents), 44% agreed (66 respondents), 2% were undecided (4 respondents), 1% disagreed (1 respondent), and 0% strongly disagreed. The total percentage of respondents who strongly agreed and agreed was 97% (145 respondents). Therefore, the majority of the younger generation strongly supports the availability of virtual technology-based tourism promotion media, such as the virtual tour concept. This view also indirectly supports the tourism potential in accordance with the needs of the global market.
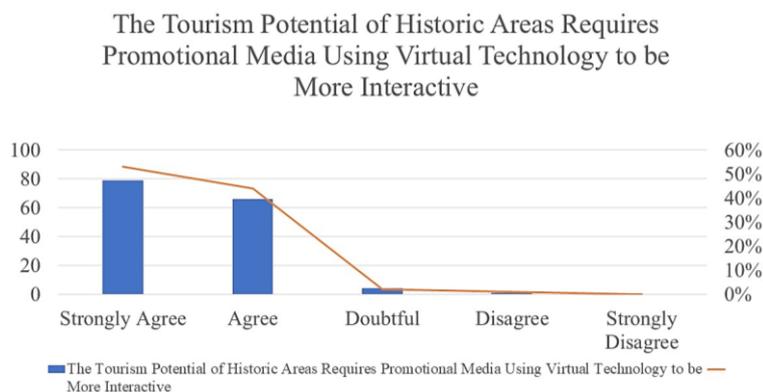

Figure 3: The view on the importance of VR-based promotional media

4.2 Tourist attractions in the Maimun area

Photographic artworks about cultural heritage have the potential to engage the public. Based on the Mayor of Medan Decree No. 433/29. K./2022, the Maimun area was designated as one of 33 potential cultural heritage sites. The Maimun area consists of the Mosque City, Maimun City, Pasar Merah, Pasar Merah Timur, Sei Mati, Suka Raja/Medan City, and Medan Maimun (Aldi, 2023). Some of the most visited tourist attractions are located in the districts of Medan Maimun, Medan Baru, and Medan Kota. The results of the literature from various sources identified four popular tourist attractions in the Maimun area.

a. Maimun Palace: The palace of the Deli Sultanate was built in 1888 by the Sultan of Deli, Makmum Al Rasyid Perkasa Alamsyah. The Maimun Palace is a blend of Malay-Islamic architecture and European elements.

b. Al-Mashun Grand Mosque: The oldest mosque in Medan is located in the Maimun Palace complex and was built between 1906 and 1909 in Middle Eastern, Indian, and Spanish architectural styles.

c. Tjong A. Fie Mansion: This heritage museum was the former home of a Hakka merchant who owned numerous plantations in Medan. Furthermore, the museum was built in 1895 and rebuilt in 1900. The house features Chinese and Dutch architectural styles and contains hundreds of artifacts and archives.

d. Sri Deli Park: This historical park was initiated by the 10th Sultan of Deli, Amaludin Sani Perkasa Alamsyah, around the 1920s to be a gathering place for sultans. The garden was built in Turkish, Indian, and Egyptian architectural styles.

Based on the four icons above, the focal object in the visualization of panoramic photography art refers to the form and function. Therefore, the appropriate shooting angle can be determined to support the immersive experience when using virtual technology. The focus of attention on each of the four icons can be seen in Table 1.

Table 1: Focus of tourist attractions in the Maimun area

Tourist attraction	Focus of attention
Maimun Palace	The palace of the Deli Sultanate
Al-Mashun Grand Mosque	Place of worship
Tjong A. Fie Mansion	House museum of Medan's important figure
Sri Deli Park	Historical park from the colonial era

4.3 Principle of landscape photography genre and shooting techniques

The principle of the landscape photography genre is to build a narrative in the minds of the viewers. Therefore, every visual element presented must have meaning. In the context of panoramic views of historical areas for VR-based tourism promotion media, the visual elements must allow tourists to visit the site. According to Orchard (2014), landscape photography can offer a transcendent experience that evokes a sense of longing through melancholic visual elements to enhance users' awareness and understanding.

The art of panoramic photography in the landscape genre conveys cultural messages. Visualizations of cultural heritage buildings showing past civilizations are packaged using photographic methods that technically require consideration of lens function and lighting. Other non-technical factors influence the photography, such as the angle or method used. This is because the exploration presented is concerned with natural beauty and the sharpness of the view as seen from the point or focus of vision (Abdi, 2012).

In the concept of virtual tour, this exploration experience is presented in three dimensions through shooting angles adjusted to the needs of the focus object, enabling users to obtain an immersive experience. Jackson and Jackson (2024) stated that the immersive experience was not a single, unified phenomenon but must be distinguished according to the aspects. Immersion may take several forms, namely 1) representational immersion refers to a sense of psychological presence within the simulation, 2) participatory immersion is associated with the interactive features of the VR experience, 3) affective immersion is related to the user's emotional engagement with the experience, and 4) narrative immersion situates the phenomenon within the flow of events being experienced. Therefore, immersive experiences may vary from one individual to another. The shooting angles for panoramic photography artwork can be analyzed as follows, considering the potential variations in the aspects of the immersive experience and tourist attractions in the Maimun area.

4.3.1 High-angle shooting technique

The high-angle method can help build a more specific imagination of the cultural heritage area by limiting the viewers to the main building or structure and eliminating the surrounding elements. The high-angle method helps show the characteristics of historic buildings or structures, specifically for exteriors. Users can experience a representative immersive experience while also being encouraged to obtain a participatory immersive experience. Figures 4, 5, 6, and 7 featured a high-angle photograph of Maimun Palace, Al-Mashun Grand Mosque, Tjong A. Fie Mansion, and Sri Deli Park, respectively. The high-angle method works because each object requires a panoramic visualization of architecture, artifacts, gardens, and activities in the tourist

area. This allows viewers to become enthralled by the atmosphere of the past and arouses the participation in learning more about the stories or events behind the historic buildings or structures.

Figure 4: High-angle photograph of Maimun Palace

Figure 5: High-angle photograph of Al-Mashun Grand Mosque

Figure 6: High-angle photograph of Tjong A. Fie Mansion

Figure 7: High-angle photograph of Sri Deli Park

4.3.2 Eye-level shooting technique

The eye-level method is a display of images in line with the eye's view. In this context, the users are directly facing the visual object. The use of an eye-level perspective enables viewers to feel a sense of closeness to the visual object, capture the details, and clearly understand the message. The method functions to visualize the interior details of buildings that have many ornaments, including elements of artifacts in museums, the character of monuments with the statues, and park facilities. In addition, a 360-degree panorama can be presented more dominantly, enabling an immersive, participatory, affective, and narrative experience. Figures 8, 9, 10, and 11 featured eye-level photographs of Maimun Palace, Al-Mashun Grand Mosque, Tjong A. Fie Mansion, and Sri Deli Park, respectively. This method can be applied to the four main icons of tourist attractions to capture the details in each architectural style, ornament, and artifact containing historical and cultural stories.

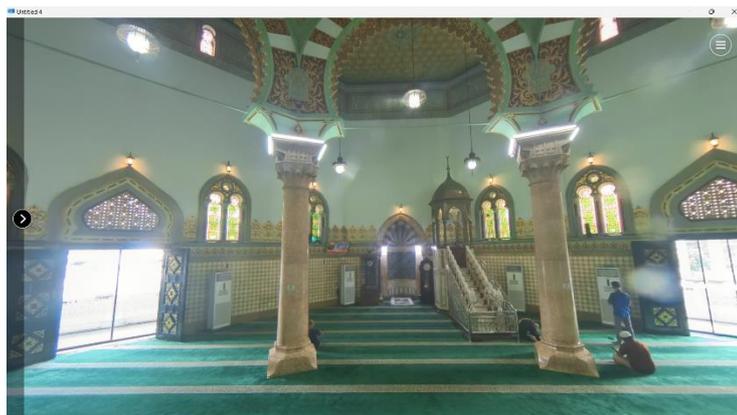**Figure 8:** Eye-level photograph of Maimun Palace

Figure 9: Eye-level photograph of Al-Mashun Grand Mosque

Figure 10: Eye-level photograph of Tjong A. Fie Mansion

Figure 11: Eye-level photograph of Sri Deli Park

Maimun Palace and Al-Mashun Grand Mosque offer a possible immersive experience in the form of ornament viewing. Meanwhile, the Tjong A. Fie Mansion provides artifact viewing as a possible immersive experience. The two photography methods for developing the immersive experience of the four tourist attractions in the Maimun area can be presented in Table 2.

Table 2: Shooting techniques and the immersive experience

Tourist attraction	Shooting techniques	Immersive experience
Maimun Palace	High-angle, eye-level	Architectural panorama, exterior-interior, ornaments
Al-Mashun Grand Mosque	High-angle, eye-level	Architectural panorama, exterior-interior, ornaments
Tjong A. Fie Mansion	High-angle, eye-level	Architectural panorama, exterior-interior, artifacts
Sri Deli Park	High-angle, eye-level	architectural panorama

4.4 Principles of composition and perspective

The application of composition in panoramic photography cannot be separated from the principle of the Rule of Thirds. This includes placing visual objects into an imaginary grid composition of thirds. Each visual object is divided into three equal parts horizontally and vertically, symmetrically, and proportionally, to form four points of intersection as the focus of attention. Imaginary lines outside the four points of intersection can function as background elements to provide depth and perspective. This composition becomes a three-dimensional panorama that can rotate 360 degrees, as reported in Figure 12.
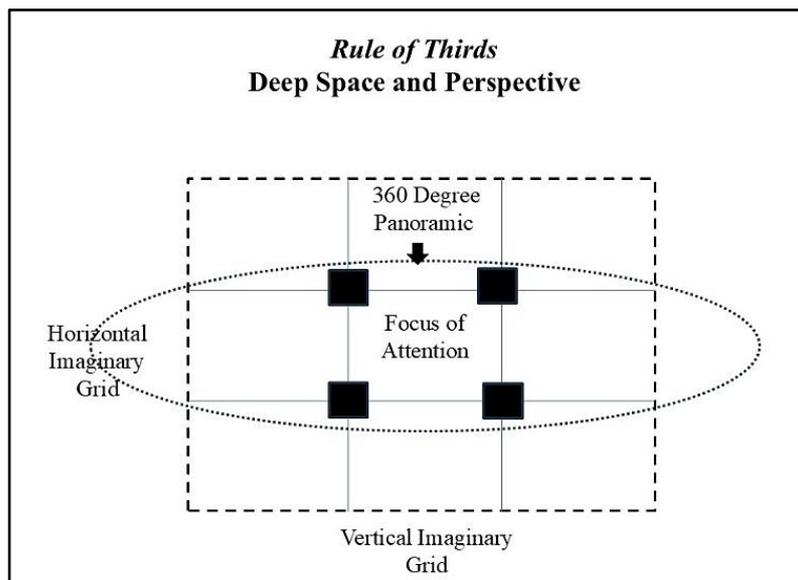

Figure 12: Rule of Thirds

The focal point of attention in panoramic photography composition must consider the aspect of shooting for impact. Nguyen (2022) stated that panoramic photography included viewing an image from a wider perspective. The impact of panoramic photography refers to the efforts to maximize visual effects through deep space and perspective. The goal is to create an engaging experience that is lasting or profound, influencing the thoughts and feelings of the viewer. This requires the establishment of a perspective using the field of view that is appropriate to the visual object. The field of view can be expanded vertically and horizontally and extended in depth. This perspective becomes a three-dimensional visualization of space with depth.

In the context of designing promotional media for the Maimun area, perspective determination considers the respective forms and functions. As explained in the previous subsection, high-angle and eye-level photography methods also refer to the respective functions of the cultural heritage. The following discussion of perspective is based on the forms and functions of the four icons of the Maimun area.

4.4.1 One-point perspective

The one-point perspective is used to focus attention on the vertical form of cultural heritage buildings for architectural style and exterior space. Shooting for impact in this perspective can be supported by an unbusy background. The focus of attention is placed in the center and at the top of the composition, as reported in Figure 13. This allows the user to focus only on one point of view. In the case of Maimun area, the one-point perspective communicates a message about the building's form, architectural style, and accompanying ornaments. This perspective is not recommended for garden areas with wider and more expansive viewing spaces.
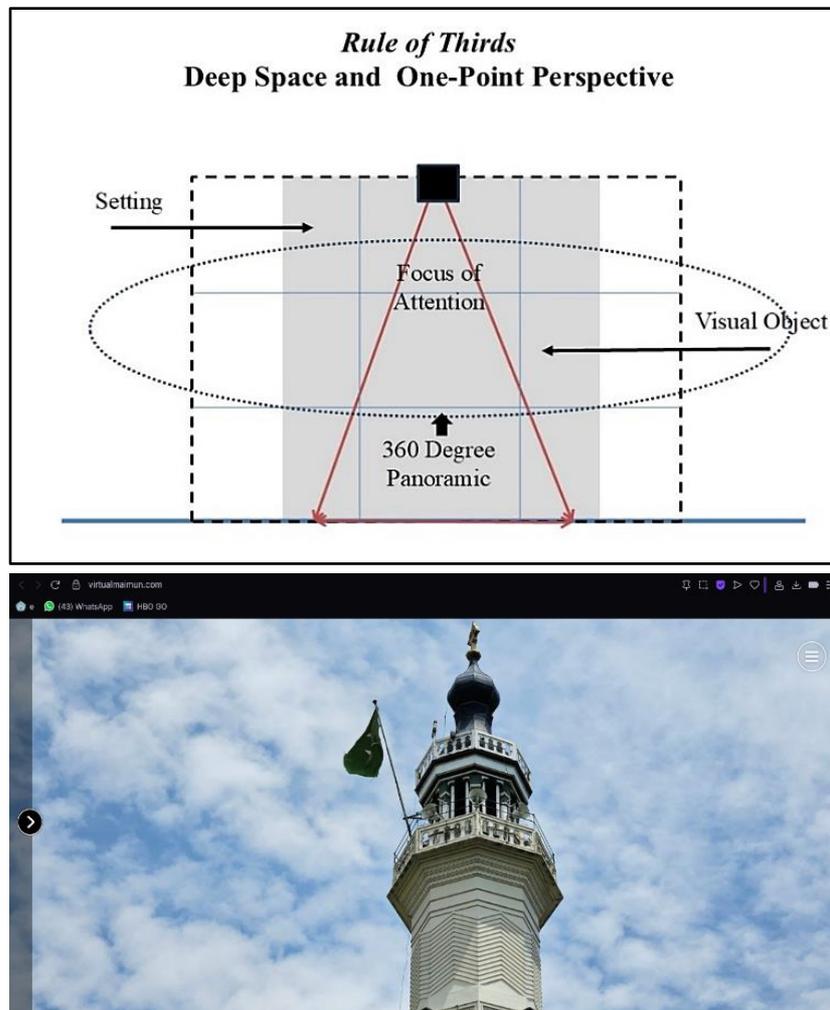

Figure 13: One-point perspective

4.4.2 Two-point perspective

Shooting for impact using the two-point perspective is adopted to provide a wide field of view, from right to left, and visualize details of interiors or open spaces, such as parks. Furthermore, users can interact with different elements and objects. Two-point perspective is presented horizontally and supported by a busy background, but the focus remains on the details extending to the right and left, as reported in Figure 14.
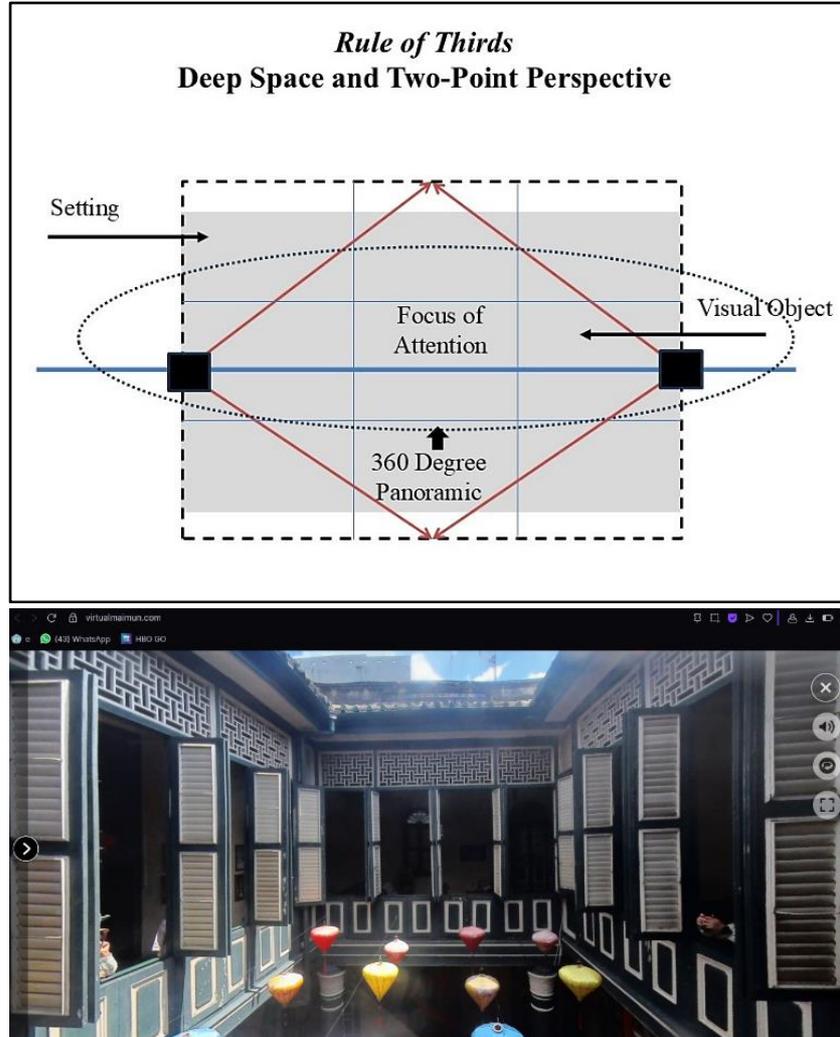

Figure 14: Two-point perspective

4.4.3 Three-point perspective

The application of the three-point perspective serves to create more imaginative visualizations, particularly to show architectural styles and building exteriors. Additionally, cultural heritage buildings have wider and taller shapes. The shooting for impact helps provide a more expansive perspective, as shown in Figure 15. The viewer is allowed to look up, down, right, and left. This perspective indirectly transports the viewer into the space and time that are part of the object's historical narrative. Three-point perspective is also applied to interior visualizations of cultural heritage buildings, conveying the depth of past spaces. The background is presented as an element that enhances the beauty of the panorama.
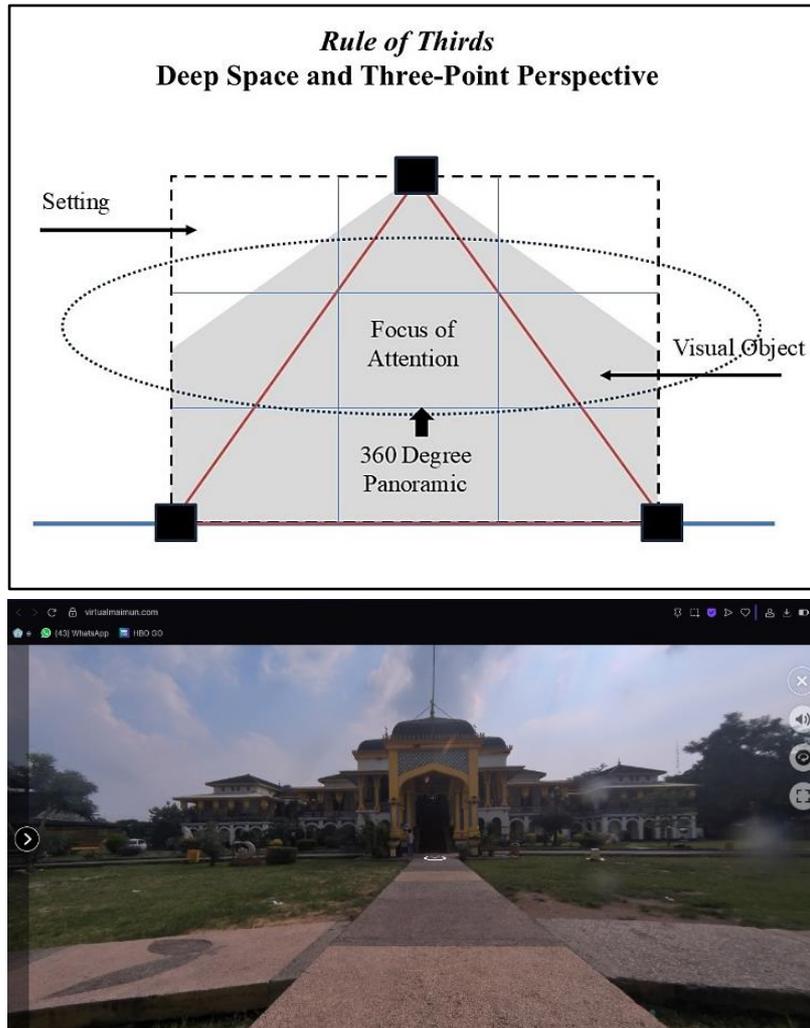
Figure 15: Three-point perspective

The three perspectives support the deep space in panoramic photography for the virtual tour concept in the Maimun area. In terms of the four tourist attractions, the application of the perspectives is outlined in Table 3. The entire attractions can be covered using the three perspectives except Sri Deli Park, which uses only the one-point and two-point.

Table 3: Application of perspective in photographic composition

Tourist attractions	Perspectives
Maimun Palace	One-point, two-point, three-point
Al-Mashun Grand Mosque	One-point, two-point, three-point
Tjong A. Fie Mansion	One-point, two-point, three-point
Sri Deli Park	One-point, two-point

In developing the virtual tour concept, this research observed the Immersify art gallery in Kuala Lumpur on August 2, 2025. At this museum, the team was able to experience the immersive experience firsthand through exhibitions in the museum rooms, complete with various panoramic visualizations. This research also observed the platform 360 Stories for the landmarks in Kuala Lumpur, Malaysia. The observations act as a benchmark to strengthen the virtual tour concept for the Maimun area.

Figure 16: 360 Stories virtual tour

Figure 16 shows the Petronas Twin Towers retrieved from the virtual tour platform 360 Stories (360 stories, n.d.). The observed virtual tour from 360 stories uses a 360 view of the Petronas Tower and some points of interest clicked to access other relevant information that can increase attractiveness and audience engagement. From this observation, there is a need to broaden the focus of attention and potential shooting angles to enhance the immersive experience as observed in the 360 Stories virtual tour of Kuala Lumpur, Malaysia.

A limitation of this research is that the virtual tour remains at an early stage of development. This research focuses on the use of panoramic photography to capture the Maimun area used as a database for the next stage in virtual tour development. Therefore, the comparison provided by the observation of Immersify and 360 Stories virtual tour from Malaysia can be a good reference for developing the virtual tour concept for the Maimun area.

5. CONCLUSION

This study identifies key panoramic photography principles in the virtual tour concept for tourism promotion media in the Maimun area. The results and discussions show that the VR-based media requires the support of appropriate composition using panoramic photography. The high-angle photography method serves to visualize the architectural style and detailed forms of buildings, gardens, or monuments, enhancing the user's imagination about the exteriors. Meanwhile, the eye-level photography method visualizes the interior details of buildings or structures with numerous ornaments, museum artifacts, monuments with statues, or park facilities, as well as access to public spaces within each tourist attraction. A 360-degree panorama can be more dominant, allowing users to experience immersion with this eye-level method.

Creators must select a variety of perspectives that suit the needs of the tourist attraction in panoramic photography composition. As a historic area, the application of one-point perspective is more functional to focus attention on the form of cultural heritage buildings. The application of two-point perspective is functional to provide a wide view of the user from right to left, specifically for visualizing interior details or open spaces such as parks, shopping centers, and culinary centers. Users can also interact directly with any objects within the environment. The application of three-point perspective creates more imaginative visualizations, particularly to show architectural styles, the exteriors of palaces, museums, and galleries, which have wider and taller areas.

This research supports the mission of Asta Cita Prabowo-Gibran to promote national independence through the development of creative economic products by providing promotional media for global tourism needs. Users should also be provided with an understanding of the panoramic photography method as a powerful element needed to support virtual visualization. The implication of this research shows the essence of proper understanding and utilization of photography to capture historical sites and create an immersive experience in the form of a virtual tour. The results serve as the basis for the development of VR-based tourism promotional media models, opening up possibilities for future research on developing promotional media for cultural heritage tourism objects in other parts of Indonesia.

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DECLARATION

1. Conflict of interest
The authors declare that there is no conflict of interest.

2. Generative AI and AI-assisted technologies in the writing process
The authors declare that there is no generative AI or AI-assisted writing used in this manuscript.

3. Data availability statement
The data that support the results are available from the authors upon reasonable request.

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Rezha Destiadi: Investigation, Methodology, Resources, Visualization

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