Conference Paper

Design of Tourism Mountain Travel Luggage Based on Augmented Reality Technology As a Media Optimization of Tourism Facilities

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Abstract

Mount Bromo is a famous tourist destination. 2.239 meters above sea level, this site brings around 1,500 tourists eazch day, of which 10% are foreign, drawn by the combination of natural and cultural beauties. Tourists are charged an entrance ticket of Rp.30.000 for local tourists and Rp. 300.000 for foreign tourists. Yet, the facilities provided are the same, and foreign tourists can feel cheated. To avert this, this study suggests that additional facilities must be provided for foreign tourists and also as a method for promotion abroad. For this reason, a Luggage Tag is provided which can be a virtual tour guide with international languages based on Augmented Reality (AR). In making this product, several stages are carried out including market research conducted at the Bromo Tengger Semeru National Park. With this product, the higher ticket price for foreign tourists is explained in the form of a virtual tour guide facility. In addition, this product can be sold as merchandise - a suitcase tag that can still display AR even if taken away from Mount Bromo. This functions as a marketing tool, attracting further foreign tourists to Mount Bromo in the future.

Keywords: Mount Bromo, Foreign Tourists, Augmented Reality, Luggage Tag.

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1. Introduction

One of the tourist destinations in Indonesia known to the world today is Mount Bromo. An active volcano with an altitude of 2,239 meters above sea level. Located in four districts, namely: Malang Regency, Lumajang Regency, Probolinggo Regency and Pasuruan Regency. Noted every day there are 1500 tourists visiting Mount Bromo and 10% are foreign tourists. To visit Mount Bromo, tourists are charged an entrance ticket of Rp. 30,000 for local tourists, and Rp. 300,000 for foreign tourists. Only with the ticket ticketing and insurance obtained, the ticket price difference that reaches 10 times is very unfortunate, in neighboring countries there are so many tourist attractions that do not distinguish ticket prices, make tourism attractions run by the local government and also still provide some souvenirs, even a free tour guide. This greatly affects the number of foreign tourists visiting Mount Bromo.

If you provide more facilities for foreign tourists to compensate for the price of tickets that are much more expensive, this will certainly be more effective for the management of this tour[1]. The facilities referred to are similar to those provided in tourist attractions of neighboring countries[2, 3], such as providing souvenirs, tourist services or with a tour guide, but with a different innovation.

In this design concept, the facilities mentioned are in one object, namely the Mount Bromo Travel Luggage Tag with Augmented Reality technology. The marker that is made can be converted to function as a bag marker which is called the Luggage Tag. Luggage tags are really needed for tourists or travellers to mark their bags or luggage. This combination of Augmented Reality was chosen because it is still classified as a new technology that began to be developed in various aspects[4–6], one of which is the aspect of tourism for this design. In its application, this Luggage Tag is made of several thin wooden slats or the like, which can be obtained together with an entrance ticket to Mount Bromo for foreign tourists. The Luggae Tag that functions as a Marker will bring up an illustration of Mount Bromo tourist destinations in the form of 3D, place names, maps, also equipped with sound explanations of destinations in three languages namely Indonesian, English and Mandarin. In general, this Luggage Tag serves as a Virtual Tour Guide, so tourists not only enjoy the beauty of Mount Bromo, but also can understand information from destinations through the Augmented Reality. The Augmented Reality application will be implemented in an Android operating system based on its mobility and usability towards many useful application[7].

The expectation of this research is so that tourist can still feel the experience of visiting Mount Bromo by using Augemnted Reality. It also has a great opportunity for Mount Bromo tourism to be promoted through Luggage Tags and Augmented Reality when used in the tourist country, which will certainly bring back more tourists to visit Mount Bromo, seeing 10% of Mount Bromo visitors every day are from tourists foreign countries

2. Methodology

Systematic design using the Winston W. Royce[8] Waterfall model which is used to make the Mount Bromo Tourism Filp Book based on Augmented Reality. This systematics in sequence starts from Identification to produce a Prototype. Where the process can only be done according to procedures and stages that have been designed as described on Figure 1.
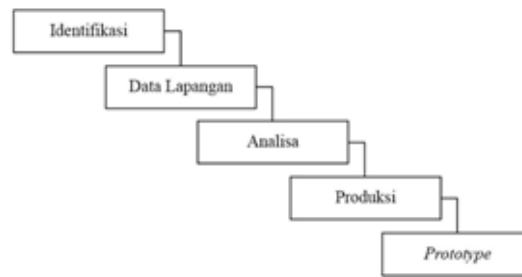
Figure 1: Systematics Design of the Waterfall model Winston W. Royce.[9]

2.1. Identification

This design procedure begins with determining the background that is part of the identification problem. The formulation of this background was carried out with preliminary observations[10], in which the writer saw the shortcomings that exist in Mount Bromo tourism, in this case the writer saw a difference in the price of admission that was quite high up to 10 times between local and foreign tourists, with the same facilities.

the problem formulation is obtained, by designing an Augmented Reality based Mount Bromo tourist Luggage Tag to cover or offset the difference in the price of the entrance ticket, and can also function as a virtual tour guide for foreign tourists.
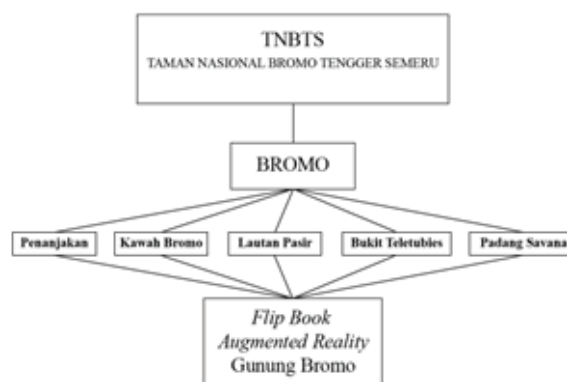
2.2. Field Data Exposure

Figure 2: Field Data Concept Map

Mount Bromo Tourism Object Data

Mount Bromo tourism object data is obtained through observations and interviews conducted directly at the location of attractions and at the headquarters of the Bromo Tengger Semeru National Park. The main data that the authors describe is the official data given by Dr. Ir Ayu Dewi Utari, M.Si as the head of the central management of the

TNBTS Center, was followed by interview data from foreign tourists and local residents relating to Mount Bromo tourism as the object of this design. From a lot of data that has been obtained the author will explain some of the data that has been summarized.

a. Place name

Mount Bromo, Bromo Tengger Semeru National Park (TNBTS) conservation area

b. Profile of Mount Bromo

Mount Bromo has an altitude of 2,392 meters above sea level, still classified as an active volcano that can emit smoke at any time, the last eruption of Bromo in November 2010 to January

This is exactly north of the highest mountain on the island of Java, Mount Semeru. The location makes the air temperature on Mount Bromo between 3 ° to 20 ° Celsius.

Mount Bromo also holds a very thick cultural customs. Every year a very large traditional ceremony called the Yadnya Kasada ceremony is held by the Tengger Tribe in the area. This ceremony is a leading destination of Mount Bromo every year, where this ceremony is a religious milestone behind the beauty of Mount Bromo and the Tengger Tribe. The people of the Tengger tribe are Hindus where there is a very famous place of worship, in the sea of sand at the foot of Mount Bromo there is a sacred place called Pura Luhur Poten which is also used as a procession of traditional ceremonies taking place prior to the summit of Mount Bromo.

Location of Mount Bromo

The active volcano located in East Java Province is located in four government areas, namely Malang Regency, Pasuruan Regency, Probolinggo Regency, and Lumajang Regency. Located in the Bromo Tengger Semeru National Park conservation area with coordinates 7 ° 51 '- 8 ° 11 'S, 112 ° 47' - 113 ° 10 'E with an area of 50,276.3 Ha. There are 4 different paths to enter the region Mount Bromo, as follows:

1. Malang Regency - Ngadas Village - Mount Bromo

2. Pasuruan Regency - Wonokitri Village - Mount Bromo

3. Probolinggo Regency - Cemorolawang Village - Mount Bromo

4. Lumajang Regency - Burno Village - Mount Bromo

Access to Bromo can only be passed by mountain vehicles or on foot. From the 4 lanes above, each lane has available parking for private vehicles and has switched to bring tourists to Bromo using mountain vehicles.

Mount Bromo Tourism Destinations

Mount Bromo as part of the Bromo Tengger Semeru National Park conservation area which is managed by the state, has zones that can be visited by tourists as tourist

destinations and restricted areas. Among the destinations Bromo tourists can visit are Penanjakan,Bromo Crater, Sand Sea, Bukit Teletubies and Savana.

2.3. Design Concepts

In this media design stage, the stages are systematically carried out as described at Figure 3.
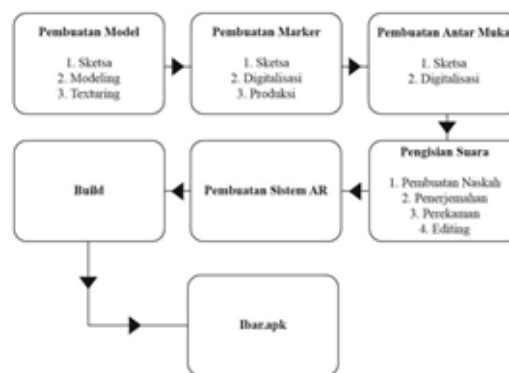

Figure 3: Application Design Schema.

3. Design Results

Activities that have been carried out include: (a) Conducting interviews with relevant agencies and tourism to obtain opinions. (b) Taking pictures of Mount Bromo Tourism destinations as a reference for the production process. The results of the data processing are used to arrange the contents of this travel luggage tag.

Augmented Reality is a technology that has only recently appeared in this digital age[11]. the existence of the Bromo Mountain Luggage Tag tour with this technology is felt able to help tourists find information about the destinations of Mount Bromo very interesting.

Figure 4: Augmented Reality Marker Package

This Luggage Tag is designed as the main media for presenting information from the Bromo mountain destination to foreign tourists, is expected to become an audio visual communication medium with effective Augmented Reality technology.[12]

Figure 5: Icon and Logo of Ibar Apps

The design of logo and themes for Ibar application is created base on the ambience and atmosphere of Bromo Crater.The natural beauty of Bromo can be enjoyed by local and domestic tourists from various angles. Some of them are enjoying the sunrise at Penanjakan, seeing directly the Bromo crater at its peak, crossing savanna fields, hill teletubies and down the sea of sand. This philosophy is also used to design layout of Ibar Apps.[13]
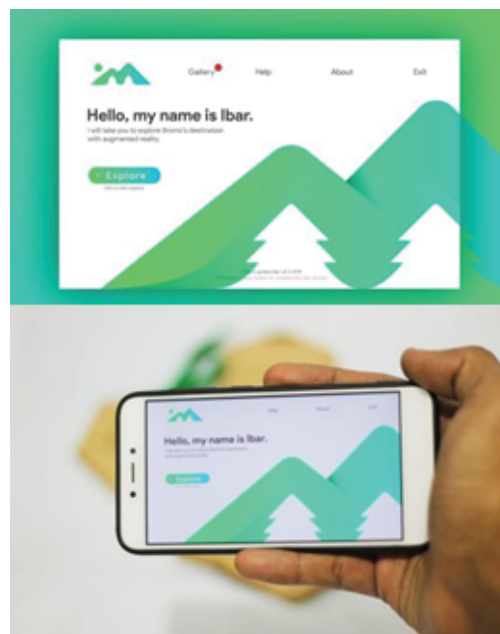

Figure 6: Design and Prototype of Ibar Apps

With this media, foreign tourists can get more facilities from local tourists, such as virtual tour guides, education or knowledge, and merchandise from Mount Bromo tours. To use it, tourists simply scan the marker in the form of a Luggage Tag obtained from a package of foreign tourist ticket purchases with the Ibar application available. The basic concept of Augmented Reality[14] on Ibar Apps is to scan the luggage tag and review the memorable 3D Design of Mount Bromo's Tourism.
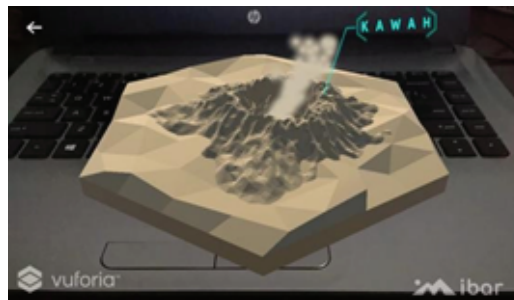
Figure 7: Ibar Apps Example Scan

As the surrounding of Mount Bromo has a lot of interesting tourism to visit, there are more markers that is designed to describe different areas. Such as penanjakan, Savana, Sand Field, and Teletubies Hill. The variants of marker scanned by Ibar Apps resulting in different image shown by AR described on Figure 8.
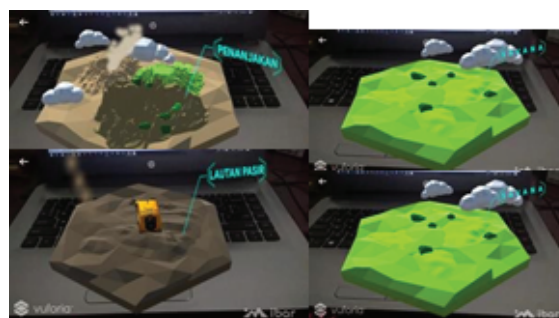

Figure 8

4. Conclution

The conclusion of this design is expected to be an effective supporting tourism media for Mount Bromo tourists, especially foreign tourists with Augmented Reality technology combined with audio visual. Destination material published is official for tourists to visit with explanations using international languages and also Indonesian.

This media design is a solution to the problem where the difference in the price of Mount Bromo tourist tickets is 10 times far more expensive for foreign tourists with the same facilities.

This application will explain about the recommended Mount Bromo destinations, complete with location map points, distance traveled, visit time, and 3-dimensional visuals of the destination that resemble its original form, an explanation with international languages can help foreign tourists who can only speak Mandarin can still understand and vice versa who speak English. The marker used can be converted into a Luggage Tag and can display AR even if it is not on location. Thus, Mount Bromo will be published

in their country through this media and invite more foreign tourists. This Ibar application also provides supporting media in the form of a set of mountain merchandise, in the form of a bannie or skullcap hat, bandana or mask, T-shirt / warm shirt, Syall, and also a tumbler or drinking bottle. Where everything is chosen according to the needs of tourists at the Mount Bromo location.

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