



Grouping of Tourist Preferences Towards Tourist Villages in East Java Based on Facial Recognition and Background

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Abstract. The research aims to propose a new method for the analysis based on face and picture content recognition technologies, travel habits, and preferences that were grouped by age, gender, and the background of tourist attractions utilized by photographers. This study uses content analysis to identify potential destinations associated with tourists visiting East Java tourist villages. The researchers analyzed 262 photos of 501 people on Facebook and Instagram. The researchers analyzed the state and condition of tourism using photos captured by tourists as the background and classified them according to the dimensions of cognitive imagery such as the natural surroundings, food, public amenities, time and entertainment, the culture of the tourist village destination and history, architectural styles, and rural life. The results show that the leisure and entertainment dimensions have the highest frequency of tourists at 36%, followed by public amenities (27%), natural surroundings (23%), and other dimensions such as food, art, cultural history, architectural styles, and rural life. Further development by the village government and community is needed to attract better tourists to visit the tourist villages, as the tourist village's success will increase the community's economy.

Keywords: Tourist preferences · tourist villages · cognitive imagery

1 Introduction

Indonesia has a variety of tourist villages nationwide. The tourist village has a diverse theme according to the region's character and its villagers. The community indeed develops tourist villages and there is interference from the local government because tourist villages have been felt to be able to improve the community's economy [1]. The research results from [2] showed that the development of tourist villages has a positive impact on the economic development of local communities, namely increasing people's income and job opportunities. Tourist villages can be developed by building the image of the tourist village, and image imagery can increase tourist satisfaction and tourist loyalty as the results of this research [3], which states that a positive destination image will make tourists feel better satisfaction. It is further stated that tourists who rate positively on the

image of a destination may be willing to revisit and recommend the destination to others. This shows that satisfaction has a positive influence on tourist behavior after visiting.

The image of tourism destinations is one of the marketing strategies for tourist destinations [4], which can directly influence the travel decisions of prospective tourists. [5] defines the image of a destination as “the sum of all one’s beliefs, ideas, and impressions of a destination”. The projected image is the DMO’s marketing picture of the location, whereas the perceptual image is how tourists feel about the place [6].

The concept of imagery has been developed by researchers [7]. This is distinct from the image of perception regarding tourist destinations, which focuses on how media and content influence people’s perceptions of East Java’s tourist villages. The semantic gap between projected and received representations of a location has been discovered in several investigations [8]. Cognitive and emotive imagery are two types of perceptual images that can be classed [9]. Affective imagery depicts the strength and proclivity of one’s emotions and sensations toward a specific subject; cognitive imagery of the goal refers to the impression and knowledge of the individual who is clear about the goal, such as weather, scenery, situation, food, and so on; and cognitive imagery of the goal refers to the impression and knowledge of the individual who is clear about the goal, such as weather, scenery, situation, food, and so on; (eg. Leisure time, happiness, sadness etc.).

Commercially, cognitive imagery has been separated into organic and impact pictures [10]. The organic image of the location is derived from non-commercial content such as films, media, brand awareness (Word-of-mouth), journals, magazine articles, and other publications and is unrelated to marketing materials. A destination-induced image is purposefully manufactured by the place and is frequently displayed in promotional films, travel brochures, and posters. According to the force of commercialization, some scholars have further separated marketed pictures into eight tiers, spanning three primary categories: ‘organic,’ ‘autonomous,’ and ‘induced’ [7]. The destination’s photos on Facebook and Instagram are used in this study to represent the image of the location.

Tourist photographs have personal value and are depictions of places [11]. Photos are intimately connected to tourist activities, even though one can make the journey without capturing the moment by taking pictures and sharing them on social media, both Facebook and Instagram. The ritual and routine essence of visitors’ photographers is defined by [12] the concept of tourist views. Tourists’ images on social media are also directly linked to their impressions. This approach shows that even a community of visitors with a comparable population, take trips, and ethnic backgrounds are more likely to behave to cultural rules in the same way [13].

It is further said that a person’s motivation to take photographs and the content of such photographs is a fundamental aspect of visual culture and modern society [14]. [15] Photographs were first used in early management study. [16] examines the role of pictures from a photographer’s perspective, demonstrating that photographs highlight what photographers feel to be essential [16]. In short, doing photo analysis is very important to research to represent a place and how tourists visit the tourist attractions that have been visited, and what preferences are prioritized by visitors to the tourist village.

Psychological qualities such as individual values, motivation, attitude, lifestyle, and sociodemographic characteristics are examples of personal aspects [17]. According to

[18, 19], customer loyalty is also related to trust and images. Travelers can be classed based on social factors such as age, education level, civil status, and also identity, socio-economic status, life-cycle stage, and domicile [17]. These personal factors impact a person's cognition and perception of their surroundings. People with diverse backgrounds will undoubtedly have different perceptions of the site [17]. Gender and age do not significantly impact photographic content when it comes to taking photographic backgrounds in tourist destinations [20]. The majority of relevant studies, on the other hand, have sought to determine how non-portrait photography can alter or express a place's image [9].

However, the majority of the images have a qualitative analysis of qualities and context. This study employs machine learning innovation for face/gender classification, age analysis, and perception of tourist satisfaction to analyze the destination from the perspective of tourists visiting 30 tourism villages in East Java.

Traditional travel imagery through tourist activities is generally assessed using qualitative and quantitative approaches [21], such as manual coding and age and gender identification using Age camera apps from the Google Play store, which researchers claim are simple. The implementation of public data activities inside the general population sector worldwide and the quantity of publicly available information have also recently significantly increased; for example, Facebook and Instagram provide exciting features to capture moments at any time and on any trip. Social media is viral right now since it can be used as a source of income for content creators. The number of photos analyzed has likewise increased from hundreds to thousands or more.

2 Research Methods

The approach used in this research was a mixed-method, known as a research type in which researchers, combine elements of qualitative and quantitative research approaches (e.g., qualitative use and quantitative point of view, data collection, analysis, inference techniques) for a broader and more in-depth purpose of understanding and proof in research [22].

In addition, content analysis was also used where a research technique is objectively, systematically, and quantitatively description of the content of the communication observed. As a research technique, content analysis has its approach to analyzing data. This approach was made by not looking directly at people's behavior or interviews. However, researchers took data from means of communication or data that has been generated and publicized by others on social media. In this study, researchers used content analysis with a quantitative approach because the formulation of the problems was to examine the potential destinations associated with tourist preferences for tourist villages in East Java.

The data source in this study was secondary data, where researchers got photos uploaded by tourists on Facebook and Instagram; where the photos are used to analyze tourist preferences and the potential of each tourist village, especially in East Java. This study took several photo samples from 30 tourist villages in East Java. Researchers concentrated on Instagram or Facebook, seeing that images posted have been usually reposted by users. Researchers photographed individual and group tourist pictures by

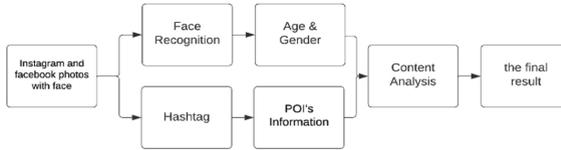


Fig. 1. Analytical framework

downloading several photos with a search of various villages in East Java, researchers managed to download photos in each tourist village, as many as 262 photos consisting of basic data sets used in this study.

As shown in Fig. 1, the framework in this study began with the researcher picking a photo that displays the face, and all photographs were kept for subsequent examination. This stage also yields profile-related picture information (such as age and gender). Following that, researchers extracted each shot to determine where tourists preferred to snap photos. Some of the main topics included in this analysis are natural surroundings, food, public amenities, time and entertainment, culture and history, architectural styles, and rural life. The age and gender of the tourist shown are provided via facial recognition.

Researchers analyzed cognitive pictures and photo backgrounds based on a person, natural order, atmosphere, actions, structures, cultures, as well as spots to investigate cognition connected to the image of tourist destinations from various cultural backgrounds. As the study focused on portrait photographs, researchers removed the ‘people’ dimension and divided each tourist village in East Java. Natural surroundings, food, public amenities, leisure and entertainment, culture, art, history, architectural styles, and rural life are the seven dimensions of the cognitive picture. After that, researchers used content analysis to manually organize cognition connected to destination images in the shot, where data gathering techniques were carried out via manual coding.

3 Results and Discussion

For assessing the perception of destinations, cognitive factors such as destination architects, natural surroundings, heritage, and social customs might be recognized as relevant to visual satisfaction. According to [23], cognitive abilities may be divided into three categories: functional-psychological, universal-unique, and holistic-individual. The features of the destination image are divided into natural surroundings, people, native locales, animals, traditional costumes, art life, local facilities, and local life [24]. While [25] divides destination qualities into amenities, arts & culture, special pursuits, F&B, fauna and flora, people, transit, details, lodging, and tourism places of interest [26]. The nine dimensions of the cognitive picture of destinations include beautiful locations, foods, persons and culture, regional mood, ecology, infrastructure and equipment, arts and recreation, education, and places.

[9] divides these photographs based on people, nature, atmosphere, activities, structures, cultures, and locations. As the study’s focus was on portrait photos, researchers removed the ‘people’ dimension and divided each tourist village in East Java’s cognitive picture into seven categories: natural setting, dish, public amenities, arts and recreation,

traditions, paintings, background, architectural styles, and rural life. Each dimension of cognitive imagery is clearer based on the numerous views above, as seen in Table 1.

Researchers employed seven aspects, including natural surroundings, food, public amenities, free time and recreation, traditions, paintings, background, architectural styles, and rural life, to combine some of the above categories with the unique qualities of tourist communities in East Java. Researchers grouped tourists by gender and associated them with the cognitive image of places based on dimensions in order to get the best results from the study. The proportion of each dimension is derived by examining the background of the traveler's photo based on gender grouping based on the photo's dimensions. As seen in Table 2, this conclusion is reached.

Among the seven dimensions, leisure and entertainment accounted for most of the 36% taken by males and 37% taken by females. Another top dimension of photos taken by females was public amenities (28%). Cultural, artistic, and historical dimensions and food each accounted for 2%. The dimensions of food, traditions, paintings, background, architectural styles, and rural life are rarely seen in their photos. The results of the analysis of cognitive image dimensions in Table 3 show that most tourists' visit tourist villages to take advantage of leisure and seek entertainment (86.26%). Then followed by the dimensions of public amenities and natural surroundings. While the dimensions that

Table 1. Dimensions of cognitive imagery of goals.

Dimension	Feature
Natural surrounding	The weather; flora (for example, flowers, grass, trees, and leaves); rivers, lakes, and other water attractions; mountains; and natural landscape in tourist areas
Food	F&B, etc.
Public amenities	Accommodation, tourist attractions, restaurants, signage, publishing materials, and other tourism amenities, as well as public and commercial facilities, tourist village facilities, transit facilities and other infrastructure.
Free time and recreation	Visiting, dancing, athletics, rowing, seeing shows and performances
Traditions, paintings, and background	Unique cultural symbols of tourist villages, traditional costumes typical of East Java, handicrafts, paintings and gallery artwork, historical artifacts in museum collections, art and history-related artifacts, cultural symbols having historical significance, and so on.
Architectural styles	Architectural styles and their environs, decorating, historical structures, antiquities, monuments, and so forth.
Rural life	Rural scenery, rural landscape, daily life of rural residents, rural environment, typical rural atmosphere, etc.

Table 2. The cognitive image dimensions of the destination classified by gender.

No.	Dimensions	Males	Females
1	Natural surroundings	22%	3%
2	Food	2%	2%
3	Public amenities	27%	28%
4	Free time and recreation	36%	37%
5	Traditions, paintings, and background	2%	1%
6	Architectural styles	6%	4%
7	Rural life	5%	5%

Table 3. The cognitive image dimensions that tourists

Background (POI) %						
Nat. Surr	Food	Pub. Amen.	Free time	Trad, Pain	Arch styles	Rural Life
54.20	4.58	66.41	86.26	4.20	11.07	11.83

are less desirable for tourists to be photographed are food as much as 4.58% and traditions, paintings, and background (4.20%). From the results of this analysis, researchers concluded that the potential for tourist visits occurs when they have free time to enjoy entertainment in tourist villages in East Java, in addition to public amenities and natural surroundings, this is likely because it can be used to take interesting photos.

like the most. In the results of the analysis, researchers grouped what potential exists in each tourist village in East Java (Table 4). Table 4 exhibits 30 tourist villages in East Java, where researchers grouped their potential based on background photos of tourists visiting each tourist village. Researchers obtained 14 tourist villages that have the potential for ‘free time and recreation’. It is followed by 7 tourist villages with the potential of ‘natural surroundings’ and 2 tourist villages with the potential of ‘architectural styles’.

Table 5 shows which dimensions are most preferred by each age group. Concerning this, the analysis shows that those belonging to the 0–49 years old group prefer the dimension of ‘Leisure and entertainment’; 50–59 years old like the dimension of ‘Leisure and entertainment and natural surroundings’; while those aged 60 years and over like the dimension of ‘Art culture and history, architectural styles, and rural life’. From this analysis, researchers concluded that ‘all ages prefer leisure and entertainment except the age of 60 years and above in visiting tourist villages in East Java’.

Table 4. Tourist villages' Potential.

No	Name of Tourist Village	Potential	% potential
1	Jugo Kesamben Tourist Village	Natural Surroundings	70%
2	Kertosari tourist village	Natural Surroundings	90%
3	Sendang Duwur tourist village	Architectural styles	90%
4	Agro Bumi Aji tourist village	Natural Surroundings	50%
5	Kupuk tourist village	free time & entertainment	100%
6	Mulyorejo Flowers tourist village	free time & entertainment	90%
7	Kampung Lawas Maspati tourist village	free time & entertainment	90%
8	Kampung Topeng tourist village	free time & entertainment	100%
9	Semen Blitar tourist village	free time & entertainment	75%
10	Tanjung Mojokerto tourist village	free time & entertainment	100%
11	Taman Sari tourist village	Public amenities	100%
12	Cisande tourist village	free time & entertainment	100%
13	Osing tourist village	free time & entertainment	80%
14	Sela Sari tourist village	Natural Surroundings	100%
15	Geni Langit tourist village	free time & entertainment	100%
16	Jodipan tourist village	Rural life	100%
17	Blekok Village tourist village	Free time and recreation	100%
18	Miru Gresik tourist village	Natural Surroundings	100%
19	Djawi Jombang Village tourist village	Public amenities	100%
20	Majapahit tourist village	Architectural styles	100%
21	Pujon Kidul tourist village	free time & entertainment	100%
22	Giliyang Island tourist village	Natural Surroundings	100%
23	Ranu Pani tourist village	free time & entertainment	100%
24	Telaga Soda tourist village	free time & entertainment	100%
25	Blitar Brown Village Education Tourism Village	Public amenities	100%
26	Guwo tourist village continues	Natural Surroundings	100%
27	Setigi Sekapuk tourist village	free time & entertainment	100%
28	Wagos tourist village	Public amenities	100%
29	Gubug Klakah tourist village	Public amenities	80%
30	Kungkuk tourist village	Natural Surroundings	90%

Table 5. The dimensions that each Age Group prefers.

	0–18	19–29	30–39	40–49	50–59	60+
Natural Surroundings	31	97	54	14	3	0
Food	2	9	4	1	0	0
Public amenities	43	114	80	16	2	0
Free time and recreation	50	152	91	17	3	0
Traditions, paintings, and background	6	8	7	1	1	1
Architectural styles	8	20	15	1	1	1
Rural Life	13	24	20	6	2	1

4 Conclusion

Visitors visit tourist villages because they want to fill leisure time and seek entertainment, and this is mostly done by females 37% and males (36%). In addition, the photos taken by females are public amenities (28%). While traditions, paintings, and background and culinary, architectural styles, and rural life are rarely seen in the photo. The dimension of the cognitive image of tourists in visiting tourist villages is to utilize leisure and seek entertainment. Of the overall objects visited by tourists, 14 tourist villages have the potential to be visited just to fill their free time and seek entertainment. In addition, 7 tourist villages have the potential to be visited because of the natural surroundings, and 2 tourist villages have the potential to be visited because they have attractive architectural styles. Thus, it can be said that most tourists visit tourist villages because they want to use leisure time and seek entertainment.

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