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TABLE OF CONTENT

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Measuring Tourist's Motivations for Consuming Local *Angkringan* Street Food in Yogyakarta, Indonesia

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Abstract

The purpose of this study was to examine the tourist motivations for consuming local *angkringan* street food in Yogyakarta city, Indonesia. We distributed questionnaires to 1,514 domestic tourists from several provinces in Indonesia visiting 42 *angkringan* spots to determine the significance of five different motivations: cultural experience, sensory appeal, media exposure, excitement and health concern. A Confirmatory Factor Analysis was used to analyze the data. A remarkable finding showed that the items belonging to the interpersonal dimension were not grouped in one factor. The Sensory appeal has the highest level of agreement among the tourists, followed by the cultural experience. The health concern has the lowest level of agreement, which is slightly lower than the excitement motivation.

Keywords: *Angkringan*, Food Tourism, Indonesia, Street Food, Types of Tourist Motivation.

INTRODUCTION

According to the Passengers Exit Survey, approximately 9.86 million foreign tourists visited Indonesia in 2015. This number has significantly increased from 8.04 million in 2012 and 9.44 million in 2014. The increase in the number of tourists visiting Indonesia is in line with the increase in foreign exchange income from the tourism sector from US$ 9.1 billion in 2012 to US$12.1 billion in 2015, which equals 10% of the total GDP [1]. As a consequence, tourism constitutes the third biggest share of the national income after gas and rubber.

For many people in the city of Yogyakarta, which is the second most popular tourist destination in Indonesia after Bali, the tourism sector has become an important factor in their livelihood. In 2015, the tourism sector contributed 19% of the total government tax revenues [2]. As one of the main tourist destinations in Indonesia, Yogyakarta has long been known as having a great number of traditional foods, for instance, *gudeg* (young jackfruit curry, cooked with coconut milk), *bakpia* (a sweet pastry), *ronde* (hot ginger beverage), etc. which support Yogyakarta's reputation as a centre of traditional Javanese culture. Each type of food has a distinctive flavour and is usually produced and sold by small local businesses that focus on one type of food. An example of the typical culinary industry in Yogyakarta is *angkringan*. The word *angkringan* is derived from '*angkring*' which means two wooden baskets tied on either side of a bamboo pole that can be carried by shoulder. Besides being a place to eat, *angkringan* is a place to socialize with friends and other customers.

Our interview found that *angkringan* first appeared in Yogyakarta around the mid-1960s and then mushroomed in some corners of the city of Yogyakarta. The Statistics Bureau states that there are currently more than 300 *angkringan* businesses operating in Yogyakarta. Various changes have occurred since the 1960s, such the specific menu items and prices as well as the typical form. While initially, an *angkringan* was a truly mobile form of street food carried or pushed around neighbourhoods, now each vendor has a specific street-side location with a cart and tent, furnished with chairs and tables. In terms of the menu variety, *angkringan* currently offers an extra diverse menu, such *as sate-satean* (sausage satay, nuggets satay, and meatballs satay), *nasi kucing* (literally "cat's rice") which are small packets of rice with various flavors of chilli sauce, and an assortment of *gorengan* (fried snacks). Angkringan also offer a variety of traditional drinks, such as coffee joss (coffee with charcoal), *wedang uwuh* (spicy ginger tea), and iced sticky rice (glutinous rice mixed with sweetened condensed milk). Typical *angkringan* remain quite cheap with many individual snacks and drinks costing only a few thousand rupiah (ten to fifty cents in USD). However, what used to be considered a cheap place for local lower class people has now become a culinary icon and a tourist attraction in Yogyakarta. Today, in

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addition to the more typical neighbourhood *angkringan,* there are also *angkringan that* specifically targeting tourists and middle class customers. For instance, *the angkringan* in the *Tugu* train station area, at the North end of the popular *Malioboro* Street, targets tourists with lower income, while the others in front of the *Kedaulatan Rakyat* newspaper office is caters to middle class and upper class tourists. There is a perception among Indonesian tourists that a visit to Yogyakarta is not complete without visiting *angkringan*.

Several studies have shown that tourists spend more than 40% of their travel budget on food [3]. Some tourists will return to the same destination because of its gastronomy [3]. Obviously, it confirms the connection between food (the culinary sector) and the tourism industry. Culinary development in a certain area is closely related to the development of tourist attractions. In fact, it can be said that the culinary sector has become an effective promotional tool and has an important role in the marketing of a tourist attraction. Many tourists who visit a certain destination are actually primarily driven by the motivation to taste certain local dishes. Culinary development in a destination will affect tourism activities and can provide a significant source of income for local residents [4].

A scale was constructed to measure tourist motivations to consume local food in developed countries in their research on South Korean tourists, and in a comparison between South Korean and British tourists [5]. Obviously, tourists who visit local culinary destinations, such as *angkringan*, have diverse backgrounds. This study, therefore aims to examine Kim and Eve's scale construction for measuring tourist motivations for consuming local food, and to investigate demographic characteristics (i.e. education level, income level, regional origin, etc.) of tourist visiting *angkringan*.

In tourism studies, motivation refers to the psychological needs that cause a person to do or not do something, and more specifically to choose to do or not do specific out tourism activities [6]. Motivation is often the main reason for tourists in choosing certain types of destinations. The tourist motivation is fundamental to understanding the tendencies of tourists, as well as to predict, to some extent, travelling habits [7]. Motivation is determined by two factors: the push factor and the pull factor. The push factor is the main reason that drives a tourist to get out of their house in the first place, without taking into account the tourism destination [8]. This factor can be seen as a desire to get out of the routine, adventure, relaxing, etc. The pull factor is the part of motivation that is constituted by the appeal of a destination, introduced through the promotion and information from other media. The push factor is a reaction to daily life, while the pull factor exists in the imagination [8]. The push factors are internal motivations and the pull factors are external motivations [9].

LITERATURE REVIEWS

Previous research shows that consuming local foods attract people because they are associated with respecting local values, protecting the environment, conserving traditional landscapes and supporting the local economic activities [10]. Also, tourists seek out foods which are regarded as being traditional as part of their quest for authenticity in their travels [11]. There have been few studies that have aimed to analyse motivational factors influencing tourists to visit local culinary attractions. For instance, Kim and Eves have developed a measurement scale for tourist's motivations for consuming local foods. They found that the motivations for food consumption could be categorized into five types, namely: cultural experience, excitement, interpersonal relationship, sensory appeal and health concern [5]. Media influence tourists to consume local foods in Japan [12]. For example, after coverage in the media many tourists visited to try Mizusawa Japanese noodles (udon). She regards this motivation as an extrinsic motivation. The following discussion will discuss these various types of motivation in greater detail.

Cultural experience

The motivation to learn new things and gain authentic experience is categorized as a cultural motivation [5]. Cultural motivation is not only related to the desire to experience cultural differences, such as music, food, lifestyle, and so on [8]. With regard to food when experiencing new local cuisines, someone also experiences a new culture [13]. Tourists consider local food to represent a unique aspect of a region's culture. Curiosity about a particular region is considered as a thirst or a desire for knowledge and new cultural experiences [14]. Consuming food is a cultural process in that it signifies a cultural meaning to those who consume it [15]. The use of spices is typical to the area, the way of cooking and presentation are also unique. These make local dishes unique markers of regional

difference that allow tourists to have a different experience in each new place they visit.

Excitement

Excitement defined as combination of an exciting experience and an escape from routine [5]. In culinary tourism, excitement refers to a need to the experience of tasting a new food or beverage that differs from the tourist's typical fare at home [16]. In addition, feelings of excitement or curiosity will stimulate expectations of food experiences [17]. The excitement motivation is related to emotion, because it involves visitors' affective responses, such as, joy, surprise, and disappointment that are evoked during the course of dining experiences.

Interpersonal relations

Interpersonal relations are a motivation that relates to the shared social nature of tourism. McIntosh et al. refers to this as the desire for *togetherness* that motivates someone to meet other people, spend time with family, and visit family and friends [7]. Fields notes that eating together during the holidays can be regarded as a medium for the reproduction of social relations [13]. More generally, many researchers have observed that food consumption is an important aspect of most social relationships between individuals, or between groups [18] that facilitates social integration and networking [19]. Tourism also functions to bring together members of the family [20]. It is obvious that a tourist destination can be a gathering place for people with similar interests and provides an opportunity for togetherness among family members and other travel companions. This is one of the most important motivations for tourism. By combining food consumption and tourist activities, culinary tourism provides a potentially potent experience of togetherness [21].

Sensory Appeal

Interesting experience, escaping from the daily routine, wanting to taste different foods, and health reasons, can be categorized together as sensory appeal [5]. From these explanations, sensory appeal associate with reducing physical stress and/or looking for a fresh and pleasant environment. With regard to food tourism, physical motivation can be related to the opportunity to try new and exotic foods. Tasting traditional describe food as a physical experience that involves sensory aspects, such as appearance, taste and smell. The motivation to seek pleasure is an important component of tourists' motivation to engage in risky and adventurous activities that offer unique sensations for every individual [25]. With regard to the pleasure of traditional food consumption, Otis asserts that trying new foods also reflects a desire to engage in something new, namely to try foreign foods that were previously unknown [23]. Some studies have also explained that the feeling of pleasure drives someone to look for food outside the home. Travellers looking for fun are based on the psychological aspect: they visit destinations that are different from the place they stay regularly. The pleasure vacation context should be physically and socially different from the environment in which one normally lives [8].

Health Concern

Health concern is an important motivational factor influencing tourists' interest in consuming local food [5]. Health is linked to tourists' own well-being and health, rather than relaxation. Interest in health has sparked a global-scale study profiling people's motivation to consume local food. A lifestyle perspective to learn what affects health-related behaviours, including consuming certain foods [24]. Women were more concerned about healthy behaviours than men, and that respondents with greater education and income behaved in ways that were healthier than less educated and less wealthy respondents [24].

Media Exposure

Media exposure refers to the influence of media on people's decision to visit a certain tourist destination. It is also related to activities of individuals in a society, gathering and sharing online information and knowledge. Obviously, with the current popularity of social media, this has become an important factor in people's tourism choices and is often incorporated into marketing strategies. The effect of media exposure in a study assesses the impact of guide books, websites, and television coverage on tourists' decision to consume Mizusawa udon in Japan [12]. Accordingly, tourists used media to find information before they decided to seek out Mizusawa udon on their travels to know more about the noodle and select a restaurant that would be appropriate for them.

MATERIAL AND METHODS

The survey was conducted during the touristic peak session from October to December 2015. We distributed surveys to 1,514 local tourists from several provinces in Indonesia who visited

42 *angkringan* spots in three main tourist destinations in Yogyakarta, namely: Malioboro, Pakualaman and Kraton areas. From each area, we selected randomly 30-40 tourists. Our preliminary research found that *angkringan* has become a tourist attraction for visitors to Yogyakarta, one of the top destinations in Indonesia for domestic tourists. In a brief preliminary survey we found that 16 out of 20 respondents visiting *angkringan* in our research area were tourists from outside Yogyakarta. For the main survey we included all respondents who were tourists from outside of Yogyakarta. The potential respondents were asked whether they were interested in joining the survey. Those who agreed to take part in the survey completed the self-administered questionnaire with help from research assistants. The survey is divided into two parts. The *first part* is the demographic background, consisting of age, gender, education, place of origin and employment. The *second part* is specifically about different types of motivation. With choices ranging from totally (1) to fully agree (5), respondents were asked their agreement to different types of motivation: cultural experience, excitement, interpersonal relation, sensory appeal, health concern, and media exposure. The motivation scale [5] supports a five-dimension of motivation and found internal consistency. The scale consisted of 24 items and it was demonstrated to have dimensional distinctiveness and stability, internal consistency, content validity, and convergent validity. In addition, we involved another motivation scale of media exposure [12]. Thus, this study uses six dimensions of motivation scale. In this study, questionnaire was first translated into Indonesian language (*Bahasa*) and later back-translated into English by the author.

This study used two types of statistical analyses [25]. The first method is a Descriptive Analysis. This method is used to analyze the background characteristics of the tourists visiting *angkringan*, for instance: age, education level, income level, regional origin, etc. The second is a Confirmatory Factor Analysis. This method was used to examine the construct validity [5] and model of types of tourist motivation [12].

RESULT AND DISCUSSION

Demographic of Culinary Tourists in Yogyakarta

The majority of tourists visiting *angkringan* are young people between 18-39 years old (93%). Approximately 74.4% are those between 18-24 years old and 18.6% are at the age of 25-39 years old. It is also shown in Table 1 that there are an almost equal number of tourists in terms of gender (52.1% male and 47.9% female) among the respondents. Respondents visiting *angkringan* are mainly Senior High School (57%) and university students (37.3%), commonly from different provinces in Java Island: Central Java 28%; East Java 16%; West Java 12%; and Jakarta 32%. Approximately 9.7% of respondents are from outside Java. If we connect the employment status of the respondents with the monthly salary, it is obvious that the monthly salary of most respondents is low. About 86.6% of our respondents receive less than US 250 per month. The reason might be that the income of Senior High School and university students is dependent upon their parents. Although some of them have a part time job and might come from middle-upper economic status, but they remain to earn little money.

Obviously, the mentioned findings are interesting if people consider that *angkringan* business commonly opens in the evening from roughly 6 pm through midnight. This might indicate that Yogyakarta, especially in the three main tourist destinations, in general, is a safe place to hang around in the evening. Another interesting finding with regard to the background characteristics of the respondents is that respondents visiting *angkringan* are mainly Senior High School and university students. This seems to affirm Yogyakarta as a city of students, in terms of both the most attractive tourist destination among the students, and the number of students studying in Yogyakarta. The Ministry of Higher Education reports that there are 137 higher education institutions located in Yogya-karta. In total, Yogyakarta has approximately 187,714 students, comprised of 105,023 male and 77,691 female students. If we connect the employment status of the respondents with the monthly salary, it is obvious that the monthly salary of most respondents is quite low. There are two reasons that might explain this finding. The first is that this finding confirms the previous finding that most respondents visiting *angkringan* are students who are not employed yet. The second reason might be that the prices of food at *angkringan* are more reasonable than other eating places, such as restaurants. Although there is a changing meaning of the *angkringan*, from local production to tourist consumption, the prices at *angkringan* are still quite low and, therefore, it is a good place to visit for tourists of limited means.

Table 1. Demographic Background of Respondents

Variable		Frequency (n=1545)	Percentage(%)
Age	18 – 24	1150	74.4
	25 – 39	288	18.6
	40 – 55	76	4.9
	> 56	2	0.1
Gender	Male	789	52.1
	Female	727	47.9
Education	Did not finish elementary school	2	0.1
	Elementary School	7	0.5
	Junior High School	43	2.8
	Senior High School	881	57.0
	University	579	37.3
Place of origin	Central Java	432	28
	East Java	251	16
	West Java	187	12
	Jakarta	482	32
	Sumatra	45	2.9
	Bali and Lombok	21	1.4
	Kalimantan and Sulawesi	20	1.4
	Others	107	6.9
Employment	Police/Army	11	0.7
	Private sector	400	25.9
	Government employee	64	4.1
	House wife	34	2.2
	University student	922	59.7
	Others	56	3.6
Monthly salary	0 – USD 75	751	48.6
	USD 76 – 150	381	24.7
	USD 151 – 250	190	12.3
	USD 251 – 350	69	4.5
	> USD 351	44	2.8

Comparing Types of Motivation

An interesting finding came out from our Confirmatory Factor Analysis (CFA) in Table 2. The interpersonal variable from Kim and Eves' types of motivation does not appear in the result of our analysis. Some of the items have low commonality, while the others are grouped in different factors. Eventually, our CFA resulted in five types of motivation according to our respondents, namely: cultural experience, sensory appeal, media exposure, excitement and health concern.

The measurement of cultural experience is related to four aspects: symbolism, feeling and experience, acceptance, and representation. Items related to symbolism, and feeling and experience have the highest factor loading indicating that these two factors were most relevant to the motivation of cultural experience for the tourists in our sample. This results indicates that tourists with cultural motivation perceive *angkringan* as the symbol of Yogyakarta. By consuming local and traditional cuisine, the tourist adopts the values associated with the local identity symbol [26].

It seems quite clear that cultural experience is an important factor for visiting *angkringan*, as a cognitive experience. They also have feeling of acceptance. For tourists, eating at *angkringan* makes them feel as if they were real Yogyakartans. Cultural motivation is also related to feeling and experience; eating at *angkringan* introduces them to the culture of Yogyakarta. It is also related to representation. Respondents feel that the atmosphere at *angkringan* reflects the atmosphere of Yogyakarta.

Sensory appeal is related to the appearance, smell and taste of the foods. The tourists visiting *angkringan* are highly motivated by sensory appeal: to see the appearance of the foods, to smell the foods and to taste the foods. According to the tourists, the food at *angkringan* looks interesting (appearance); the smell of the food at *angkringan* is tempting (smell); tourists also visit *angkringan* because of the taste of the food (taste). This finding confirms that the physical motivation connects tasting traditional food as a physical experience through sensory aspects, such as appearance, taste and smell [5]. Sensory appeal is perceived as the main factor for people in finding new food experiences [27]. The

measurement of media exposure is related to the influence of media, including social media, the internet and television. Accordingly, respondents visit *angkringan* after their friends upload pictures on social media; tourists got information about *angkringan* from the internet; and they are interested in visiting *angkringan* after seeing coverage on television. Some research projects have indicated the power of media influencing the tourist's motivation visiting a certain destination, including culinary tourism [28]. The measurement of status motivation reveals that this motivation is related to media influence, including social media, the internet and television. The motivation to gain prestige is associated with personal pride, the desire for recognition and attention of others [7]. Similarly, the 2015 UNWTO report one of the characteristics of tourism activities is that tourism is a form of existentialism. It means that tourism is a medium to show others one's existence. Taking pictures while visiting culinary destinations, and posting them on social media is an example for improving the status and pride, which can show a person's identity or differences with others.

Excitement seems to be related to the desire to escape from routine activities. The measurement of this motivation is related to enjoyment and a break from daily routine. Our respondents visit *angkringan* to enjoy themselves, to break from their daily routine. Tourists spend their free time after other tourism activities at *angkringan*.

Table 2. Factor Analysis

Types of Motivation	Factor loading	Reliability coefficient	h^2
Cultural Experience		**.91**	
Angkringan is the symbol of Yogyakarta.	.75		.57
Eating at *angkringan* introduces me to the culture of Yogyakarta.	.74		.56
Eating at *angkringan* makes me feel like I am a Yogyanese.	.73		.56
The atmosphere at *angkringan* reflects the atmosphere of Yogyakarta.	.69		.51
I will not feel that I am in Yogyakarta unless I enjoy the foods at *angkringan*.	.66		.48
By eating at *angkringan*, I experience Yogyakarta.	.66		.51
How to eat at *angkringan* represents a unique culture of Yogyakarta.	.65		.46
My visit to Yogyakarta would be incomplete unless I visited *angkringan*.	.64		.55
I get more experienced in Yogyakarta if I visit *angkringan*.	.60		.49
I am more aware of Yogyakarta culture after having eaten at *angkringan*.	.58		.46
Sensory Appeal		**.87**	
The menu at *angkringan* looks interesting.	.78		.64
Foods at *angkringan* are tempting me.	.78		.65
I am interested in the appearance of foods in *angkringan*.	.74		.58
I like the variety of food at *angkringan*.	.70		.51
The smell of the foods at *angkringan* is tempting to me.	.67		.50
I visit *angkringan* because of the taste of the foods.	.63		.51
I visit *angkringan* because it offers delicious foods.	.61		.48
Media Exposure		**.89**	
I visit *angkringan* after friends uploaded its pictures on social media.	.81		.71
I got information about *angkringan* from the internet.	.76		.63
I am interested in visiting *angkringan* after seeing coverage on television.	.75		.61
I find references about *angkringan* from the Internet.	.75		.61
I learned about *angkringan* through social media.	.75		.61
I am interested in visiting *angkringan* after seeing a celebrity visited *angkringan*.	.73		.56
The media is a reliable source of information about *angkringan*.	.65		.50
Excitement		**.80**	
I visit *angkringan* to enjoy myself.	.72		.62
Angkringan is the place to enjoy the time outside my daily routines.	.67		.57
I spend my free time at *angkringan*	.67		.57
I visit *angkringan* after I finish my daily routines.	.65		.52
When I visit Yogyakarta, I will definitely go to *angkringan*.	.49		.50
Health Concern		**.76**	
The traders maintain the cleanness of their stalls.	.76		.63
The traders provide trash cans.	.75		.58
The traders cover the food properly.	.74		.59
The traders provide hand washing.	.69		.56

Notes: Factor Analysis (Paf, Oblimin rotation), commonalities (h^2), percentage of explained variance, and reliability (Cronbach's alpha) of types of motivation (N=1545)
Scale: 1= Totally disagree; 2= Disagree; 3= Not sure; 4= Agree; 5= Fully agree. Explained variance is 55.20%.

Table 3. Levels of Agreement with Regard to Types of Motivation

	N	Mean	Standard Deviation
Sensory Appeal	1545	3.45	.69
Cultural Experience	1545	3.40	.71
Excitement	1545	3.20	.78
Health Concern	1545	2.98	.76
Media Exposure	1545	2.46	.79

Notes: Scale: 1= Totally disagree; 2= Disagree; 3= Not sure; 4= Agree; 5= Fully agree.

Interpersonal relations can be interpreted as an interaction between people socially and emotionally [5]. Visiting *angkringan* during vacations enables people to distinguish themselves from other people and to interact with others.

As a developing country, health concerns are a significant issue, particularly with regard to food consumption. In this study, hygiene and cleanness are the major factors related to the *health concern* motivation. Respondents emphasize that *angkringan* owners should maintain the cleanliness of their stalls. The owners should also provide trash cans and cover the food properly. Another important point of health concern is that the owner should provide a place for hand washing.

Level of Agreement on Types of Motivation

The sensory appeal (m 3.45; s.d. 0.69) has the highest level of agreement among the tourists, followed by the cultural experience motivation (m 3.40; s.d. 0.71). The media exposure (m 2.46; s.d. 0.79) has the lowest level of agreement among the tourists, which is slightly lower than the health concern (m 2.98; s.d. 0.76). The fact that sensory appeal has the highest level of agreement for tourists visiting *angkringan* is evident. Most people will visit culinary spots due to their sensory appeal motivation. They primary go to culinary attraction for a delicious meal, eye-caching menu and foods with good smell. Cultural motivation has the second highest agreement among the tourists (Table 3).

This is in accordance with the fact that Yogyakarta is famous for its cultural tourist attractions. Visiting *angkringan* can also be considered as cultural tourism. Culinary tourism is categorized as cultural tourism because food represents a culture of a region and has its own unique features. If we consider the items belonging to cultural motivation, it represents the motivation to learn about local culture [16]. People visiting *angkringan* are motivated by the willingness to learn about the culture of Yogyakarta. Visiting local eateries, such as *angkringan* can provide a moral *feel-good* factor associated with its consumption [11].

CONCLUSIONS

This research has produced results which have high validity and reliability in understanding tourists' motivation for culinary tourism, so that later they can be used in other studies with the same theme, but with a different location. Based on the findings of our research, there are two aspects that are most important for *angkringan* in Yogyakarta and perhaps for other street foods that have become tourist attractions: the physical and cultural aspects. According to our results, physical aspects have the highest level of agreement among our respondents. Here three aspects should be taken into account: the appearance, smell and taste of the foods. The motivation with the second highest level of agreement among our respondents was cultural motivation, particularly the aspects of symbolism and local representation.

Indeed, the development of the *angkringan* business has gone hand in hand with the development of tourism in Yogyakarta. Without a doubt, culinary tourism, such as *angkringan* should take into account the tourist motivations and background characteristics in order to find suitable marketing strategies.

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Identifying Impressive Landscape Objects Based on Geotagged Photographs (A Case Study of Self-Portraits and Ordinary Photos)

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Abstract

Photographs are important elements in ecotourism activities. The current research utilizes respondents' geotagged photographs to explore the potential landscape objects with its locations. The study invited 61 respondents to come to Bukit Kucing Forest and capture impressive landscape objects. The study used Getis-Org Gi* Hotspot analysis tools in ArcGIS to identify hotspots places based on the numbers of closest photos captured points to five-meters trail segments. There were 1,712 geo-tagged photographs consist of 412 self-portraits and 1,300 ordinary photographs collected from respondents. The finding shows that geotagged photographs, both self-portraits and ordinary photographs, performed hotspots places that containedimpressive landscape objects including: physical structures, wide opening area and panoramic views. Self-portraits' hotspots which were detected more spread and less number than ordinary photographs were able to perform places that werenot detected in ordinary photographs' hotspots. The current work shows that geotagged self-portraits is able to be utilized as object research in identifying hotspots of impressive landscape spaces and objects. The maps of geotagged photographs both ordinary photographs and self-portraits are able to be used as information of visitors' preferences for developing masterplan of ecotourism.

Keywords: forest, Geotagged, hotspots, photographs, self-portraits.

INTRODUCTION

Visitors' preference and behavior are important aspects to be considered in ecotourism management. Information about what potential objects that visitors see and how they react to them is needed to develop sustainable ecotourism programs. In Indonesia, information about preferred objects in a landscape are usually obtained by evaluation or observation studies involving on-site visitors or local people using interview method and questionnaire tools [1,2]. However, these research methods often leave questions regarding authentic evidences that visitor's impressed sightings at the site and where their locations are. Photographs produced by people or participants who do travel activities are possible to be used as supplementary data to illustrate people experience in a travel environment [3].

Photo-based landscape research is one method to identify visitors' visual preference in a forest. Taking photographs is an important component in recreation and tourism experiences [4]. Apart from the people who capture them, photos are important indicators of the perception of landscapes in photo-based landscape assessment research [5]. Photographs not only show what people see and how they see it but also how they know and understand the object they see [3]. Research using visitors' photographs can clarify impacts of resources, visitors' perceptions, and experiences, thereby providing valuable input for management and visitor data collection efforts [6].

The self-portraits are a popular photography behavior in tourism and recreational activities. It is a type of photograph in which the main object is the human whose face stares at the camera. Selfie photos are one type of self-portraits but human as main object capture the photos by him or her selves. Selfies show that the person taking the photo *was there* and witnessed the events in a particular time and space [7]. Taking a selfie is an expression of one's self in a place and time; vacation spots, landmarks, and recreational destinations are common place elements for selfies [8]. Therefore, in this research, we hypothesize that visitor' self-portraits, including selfie photos that complemented by geotagged information reflect popular places and identify impressive landscape as self-portrait background.

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GPS technology and research using GPS tools to track visitors has been conducted since around 2005 [9]. Since then, the use of GPS tracking has contributeto photo-based landscape research. Through GPS tracking, it is possible for researchers to trackthe location of visitors' captured photos, assign geotagging information to photos and use GIS technology to detect trends and hotspots of locations captured in photographs [10,11].

The objective of the current research is to identify impressive landscape views based on visitors' geotagged photos captured while walking in Bukit Kucing Forest. The study aimed to investigate if photo-based research can be implemented for Indonesian ecotourism site, based on the fact that taking photos is popular behavior among Indonesian tourist. Using geotagged photographs, the information obtained is about both the content of the photographs and the location where they were captured which is an important input for forest management. We detected photographs hot-spots as impressive viewing places and identified the popular landscape as elements captured by respondents.

RESEARCH METHOD

Study Site: Bukit Kucing Forest

Bukit Kucing Forest is a protected area in the middle of Tanjungpinang City, capital of Riau Island Province, Indonesia. The province comprises 2,408 islands, and Bukit Kucing Forest is located on Bintan Island (Fig. 1), 462 m south of the coastal line. The site is influenced by the coast in terms of biodiversity. The total area of the forest is 54.4 ha which is surrounded by settlements. The area has been well preserved since the Johor-Riau-Lingga Kingdom era. The forest is open for visitors' recreation and local people's activities, such as bathing, collecting water, and washing clothes. The types of recreation activities include sightseeing, trekking, and camping. Forest guards employed by the city government protect the site from illegal logging, forest fires, hunting, and other illegal activities [12].

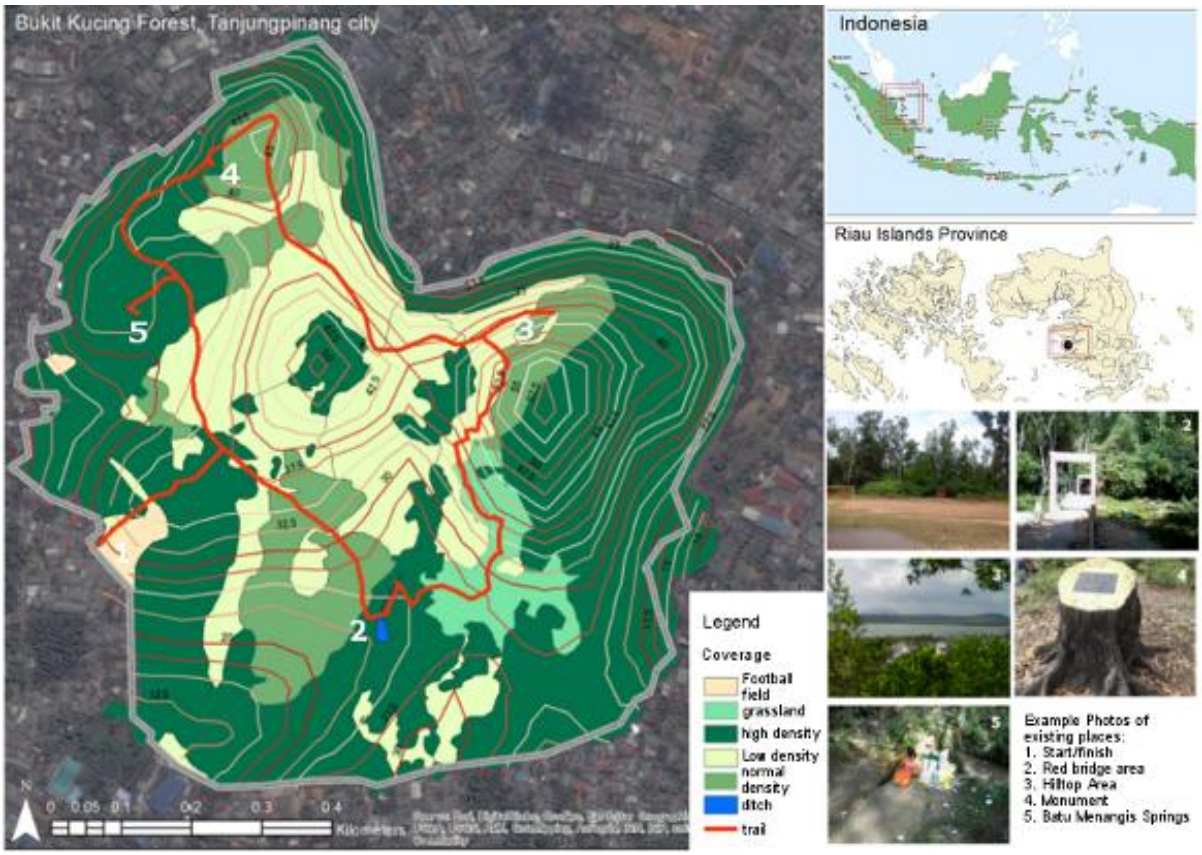

Figure 1. Location of Study

As the main green open space in Tanjungpinang City, Bukit Kucing Forest serves numerous functions including water catchment and wildlife conservation. It provides a habitat for various birds, including the predatory eagles that fulfill an important role in the ecosystem. A large variety of unique vegetation rarely found in other places on Bintan Island also grows in the forest [13].

Predefined Trail

The predefined trail passes a number of recreation locations including: the Red Bridge area, hilltop gazebo with a city view, historic inscriptions sculpture and Batu Menangis Rock Springs (Fig. 1). The trail runs a length of 2,695 m counter clock wise in a loop, with a similar start and finish point at the Forest Guards' base camp. With the weather and various slopes, visitors need at least 1 hour and 30 minutes (i.e. without taking pictures) to complete a loop on this trail.

Tools

The current study asked respondents to use their own smartphones or camera phones to take photographs. Thus, the study took advantage of the ubiquity of the use of such devices among Indonesians. Geo-tagging is a technology integrated in modern smartphone and camera devices. However, to ensure the accurate location of the photographs captured by each respondent, each was given a GPS logger (I-gotU GT 120 GPS Logger from Mobile Action Technology, Inc, with an SiRF Star III Low Power chipset), which can auto-map the GPS location of photos captured with accuracy 10-20 m. Before distributing the GPS loggers, the time setting on the respondents' cell phone, smartphone, or camera was synchronized with the western Indonesian time zone.

Participants

The respondents were 61 university students in Tanjungpinang City: 56 students from University of Maritime of Raja Haji Ali (Umrah University), 10 from Sekolah Tinggi Ilmu Sosial dan Ilmu Politik (STISIPOL) Raja Haji Tanjungpinang, and 2 from Sekolah Tinggi Ilmu Ekonomi Pembangunan (STIEP) Tanjungpinang. Respondents were selected based on assumption that the university students possessed the appropriate knowledge to offer objectives evaluations of Bukit Kucing Forest. Regarding their educational background, none majored in landscape or forestry. As such, the respondents represent regular visitors to the forest.

Students who were interested joining as participants were invited to a short orientation meeting on March 23, 2015. The invitations were distributed with the help of Umrah University administration officials and the *Mahapala* nature conservation students' organization using the short message service (SMS). The on-site survey was conducted from March 24 to 27, 2015, and the number of students per day was limited to 20 because of the limited number of GPS logger units.

Procedure

Respondents were asked to demonstrate the landscape that impressed them in Bukit Kucing Forest by taking photographs. Respondents came to the start/finish point in the Forest Guard base camp. Before they traversed the specified trail, the researcher explained the route, procedure for capturing photographs, and the use of the GPS logger. Afterwards, the forest guard explained rules to observe while walking at the forest. Subsequently, each respondent was lent a GPS logger, which was placed in the respondents' bag, hand, or trouser pocket. Respondents were asked not to push the button of the GPS logger during the walk. The GPS loggers recorded their positions on the trail when taking photographs according to the time setting. As the forest did not have a direction map, respondents were divided into three groups, each guided by a forest guard. Although this procedure had the risk of respondents being influenced by other people [14], this option was deemed the best choice for safety reasons.

On site, respondents were asked to take photographs that the landscape impressed them, using their cellphone, smartphone, or camera device. As the Internet connection in Tanjungpinang City was weak, it was difficult to ask respondents to send their digital pictures to the researcher online. Therefore, all pictures captured by respondents were transferred to the researcher's laptop after they had completed walking the trail.

At the finish point, students were asked to return the GPS logger, and the researcher copied the GPS logger file to a laptop. Each respondent was given a transportation fee after the image and GPS logger files were transferred to the researcher's laptop.

Analysis Method

The time stamps of respondents' photographs were matched with data from the GPS loggers' using @trip software. The data used

for the next step was collected from the geo-tagged photographs exported into ArcGIS software to obtain photographs points on a map. The next step entailed the analysis of geo-tagged pictures in ArcGIS. Basic data was obtained from the City Government of Tanjungpinang on the: site boundary, contour line with interval contour of 0.50 m, islands of the province, and city roads in a geo-database file and actual site plan in a .jpg file.

The data on photographs points in ArcGIS was analyzed to obtain distribution and hotspot trends. A hotspot is marked by a concentration of photographs points corresponding to the quantity of photograph staken by the respondents. The data were analyzed using Hotspot analysis Getis-Ord Gi* tools, which calculates the statistics of each feature in a dataset where the resultant Z-score indicates whether the features have high or low values clustered spatially. Here, each feature was examined within the context of neighboring features. In the analysis, the trail was divided into five-meter segments. All geo-tagged points close to each of the segments were counted to obtain the standard deviation (z values). A segment becomes a hotspot if the geo-tagged points have a z-score higher than 1.96, indicating 95% confidence. The hotspots of ordinary photos and self portraits were compared to obtain differences in respondents' preferred landscape elements.

RESULT AND DISCUSSION

Respondents' Identity

The average age of respondents was 20 years, and the age range was 18 to 31 years. Regarding gender, 48.21% of the respondents were male and 51.79% female. More male respondents reported having previous knowledge and awareness of the site before the site survey. However, only nine male and two female respondents had visited the site before the site survey. Respondents mostly came from other cities (67.86%), and were living in rented rooms in Tanjungpinang since starting their university studies. In total, of 64.29% respondents who came from cities other than Tanjungpinang had never visited the site.

Respondents' Geo-tagged photos

From 61 respondents, 1,712 geo-tagged photographs were collected. The geo-tagged photographs were analyzed according to two categories, namely self-portraits and non-selfportraits photos. Next, the non-self portrait photos will be called as *ordinary photos*. A photograph was categorized as self-portraits if it featured a human whose face staring at the camera. The self-portraits could be photos captured by respondents' holding camera (selfie photos) or taken by other people (assisted self-portrait). On the other hand, the ordinary photos are photos without human as main object.

Not all respondents captured self-portrait at the site. As such, 9 respondents (14.76%) did not take self-portraits at the site. thus, 412 self-portraits were produced by the 52 respondents (85.24%) who captured self-portraits during their walk. The vantage points of each respondent's photographs were detected by the ArcGIS software. The Getis-Ord Gi* hotspot analysis tool was used to analyze the concentration of capture points that close distance with five-meters segments along the predefined trail that next will be called as hotspots segments. Figures 2 shows the hotspots of trail segments indicated by thicker red lines are more significant than other segments. The self-portraits capture points were represented by x symbols along trail and the ordinary photos capture points are represented by + symbols.

Ordinary Photographs Hotspots

There were 1,300 Ordinary photos captured by respondents. There were 4 hotspots places performed by 411 Ordinary photographs (Table 1). Hotspots A is the most popular hotspots place with 203 ordinary photographs. In this area, there are various types of landscape elements that impressed respondents and captured them as photographs' objects. Mostly photographs of hotspots A consist of physical structures (34.98%), trees and shrubs (21.67%), corridor (19.21%), part of plants (11.82%), natural features (10.34%) and the rest is animals and opening area (1.98%). Based on the photos content, the bridge is the most physical structures captured in photographs of these hotspots. The hanging style and red color of the structure makes the bridge easy to spot from a distance and breaks the monotonous green color of the surrounding trees and shrubs. Here, *contrast* as a landscape design principle, is prominent in the design of the bridge and influences its composition, all of which attract visitors' attention. The design of the Red Bridge is also unique compared to the other bridges in Tanjungpinang City. The bridge is not only captured as a target object of photographs, it is

also a vantage point that enabled respondents to capture surrounding objects.

Hotspots B consist of 146 ordinary photographs. The photographs mostly contained with opening area of grassland (43.84%) followed by part of plants (24.66%), trees and shrubs (16.44%), animals and animals' imprints (9.59%) and rest of them are natural features and panoramic view (5.47%).The grassland forms a wide bit of scenery that makes it possible for respondents to see trees in the far distance as background. Unlike in other parts along the predefined trail, the trees in the area offer less canopy coverage and provide full sun that reaches the forest floor. Therefore, it offered a wide landscape scene and attracted respondents to stop and document the view. The part of plants and animals that fewer captured in other hotspots were captured more in this place. Those objects are potential objects that need to be more explored as attraction in ecotourism programs of Bukit Kucing Forest.

Table 1. Number of Focused Objects Captured in each Ordinary Photos' hotspots

Background	Hotspot				Total
	A	B	C	D	
Trees & Shrubs	44	24	2	3	73
Opening Area	2	64	0	0	66
Part of Plant	24	36	2	2	64
Animal	2	14	0	0	16
Corridor	39	0	1	0	40
Natural Features	21	4	0	0	25
Structures	71	0	2	18	91
Panoramic view	0	4	31	1	36
total photos influence hotspots	203	146	38	24	411

Hotspots C consist of 38 ordinary photographs. Similar with the trend of self-portraits background, the focused objects of photographs of hotspots C is mostly consist of panoramic view of Tanjungpinang city. The panorama of the city in lower elevation can be seen from this hilltop. A 9.50 m^2 gazebo is located on the hilltop, which become resting points for respondents walking up the ascending slope. While resting, respondents enjoyed a panoramic view of Tanjungpinang City and took photographs.

Hotspots D consist of 24 photographs which is the fewest number of photographs hotspots of ordinary photos. The photographs in these hotspots mostly consist of the Historic Inscription Sculpture as focused objects (75%). The sculpture looks regular, but on the logged part, there is a historic inscription noting replanting activities in 1989 as supervised by City Major of Tanjungpinang. Respondents were interested in the history of Bukit Kucing Forest; therefore, they captured it in photographs.

Self-Portraits Hotspots

Total 412 self-portraits captured by respondents, 108 photos influenced appearance of 7 hotspots of trail segments (Fig. 2). This means that in those segments, the number of closest self-portraits points is more than other segments that are not hotspots. The number of self-portraits in each hotspot segment differs (Table 2). In hotspots 1, nine photographs were taken with the *Melaleuca cajuputi* trees understory as background. In hotspot 2 which is similar location with hotspots A in ordinary photographs', 42 photographs were taken at the Red bridge area. For hotspot 3 which is similar location with hotspots B in ordinary photographs, seven photographs included the grassland area and hotspots 4 which is similar location with hotspots C in ordinary photographs included 19 photographs of the hilltop area. Hotspot 5 included 8 photographs of corridor with shrubs on left and right sides of corridor. In hotspot 6 which is similar location with hotspot D in ordinary photographs, 16 photographs included the Historical Inscriptions Sculpture. In hotspot 7, seven photographs captured the Acacia trees understory as background.

Table 2. Number of Background Scenes Captured in each self-portraits hotspot

Background	Hotspot							Total
	1	2	3	4	5	6	7	
Trees & Shrubs	6	2	1	6	6	4	6	31
Opening Area	1	0	6	0	1	0	0	8
Part of Plant	0	0	0	1	0	0	1	2
Animal	0	0	0	0	0	0	0	0
Corridor	1	5	0	1	1	2	0	10
Natural Features	0	2	0	0	0	0	0	2
Structures	1	33	0	4	0	10	0	48
Panoramic view	0	4	31	1				7
total photos influence hotspots	9	42	7	19	8	16	7	411

There are hotspots 1, 5 and 7 of self portraits that were not hotspots for ordinary photographs. Although the number of self-portraits and ordinary photographs were different, but it shows that the self-portraits were able to show more numbers of popular places than ordinary photographs. Self-portraits with understory spaces as background were mostly taken in hotspots 1 and 7. The self-portraits in hotspots 1 were mostly taken under *M. cajuputi* tree canopy in between of spongy bark trunks with less of shrubs on the forest's floor (Fig. 3). This is

distinguishing characteristic of the *M. cajuputi*, which is mass planted among other trees. The unique feature in hotspots 7 is the understory of *Acacia auriculiformis* trees. Similar to hotspot 1, this area is characterized by fewer shrubs in the understory below Acacia tree canopy. The floor of the forest is clearly visible covered by the fallen leaves and trunk's texture of Acacia trees. Shrubs as self-portraits background were evident mostly in hotspot 5. There are many dense shrubs on left and right sides of the corridor. Actually, there is no specialty in the morphology of the shrubs, but because it form vertical sparse wall, some respondents stopped for a while and took photographs with the shrubs as background.

However, there were objects that less captured in self-portraits background but more captured in ordinary photos. These objects are small detailed landscape objects such as part of plants, animals, animals' imprints and natural features. It shows weakness of self-portraits that respondents difficult to capture small detailed elements as self-portraits background.

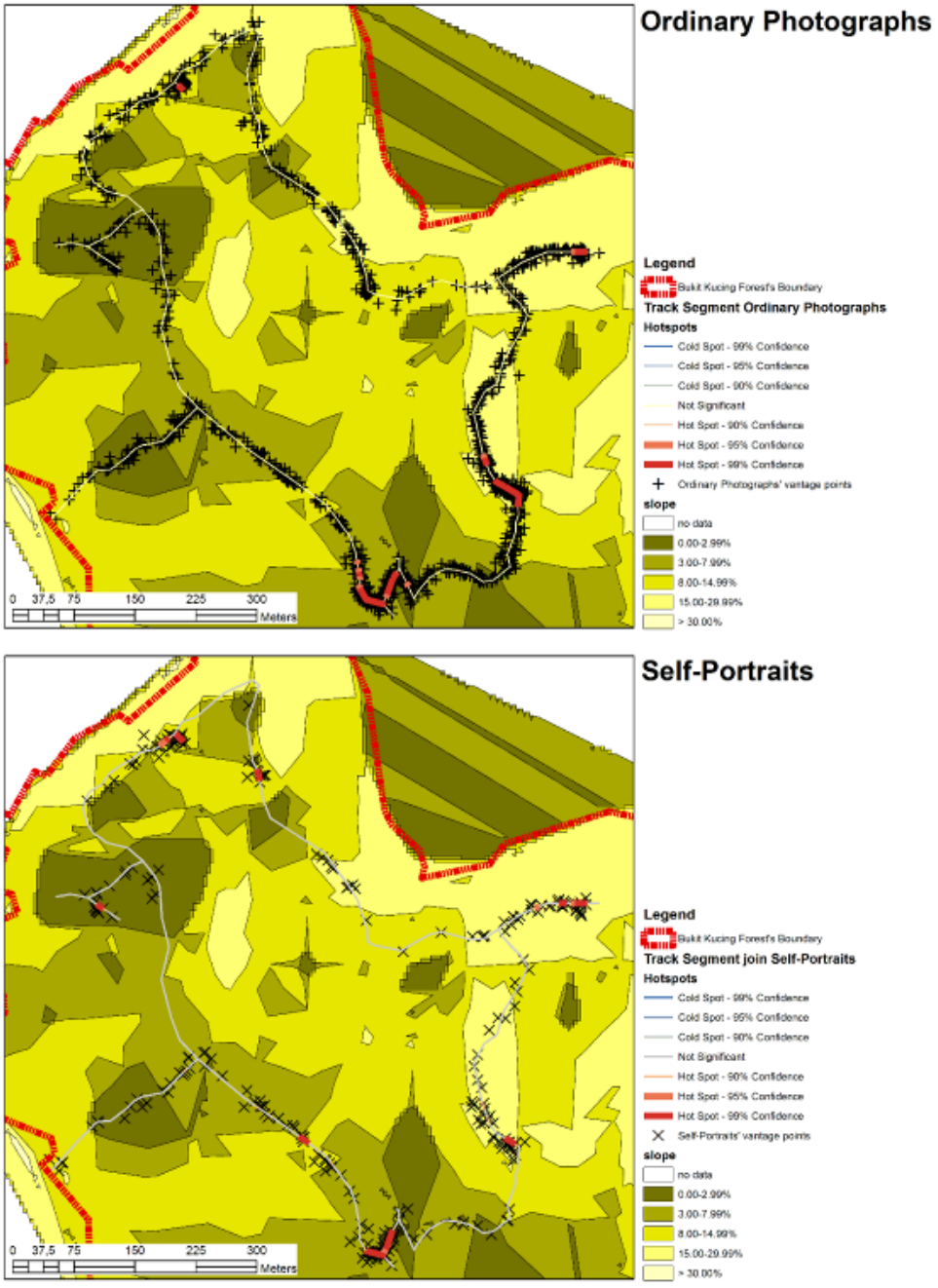

Figure 2. Hotspots Map of Ordinary Photographs and Self-Portraits

Figure 3. The examples of self-portaits with background scenes
Description: 1) Hotspots 1; 2) Hotspots 2; 3) Hotspots 3; 4. Hotspots 4; 5) Hotspots 5; 6) Hotspots 6; 7) Hotspots 7

General Discussion

The geotagged photographs is useful to perform locations and hotspots of where photographs taken as shown in Figure 2. According to the procedure of taking photographs in this research, the geotagged photographs captured by respondents reflect the popular locations and landscape objects that impressed respondents. It is similar result with other geotagged photo-based research [10,11,13] that the geotagged photographs able to perform places and preferred objects on a particular sites.

The ordinary photographs were more concentrated into fewer hotspots places than self-portraits. It identified from number of hotspots places of ordinary photographs which is located on 4 hotspots influenced by 411 ordinary photographs while self-portraits hotspots are located on 7 hotspots influenced by 108 self-portraits. The ordinary photos hotspots more concentrated to 4 places with more number of photos than self-portraits hotspots. This means that the impressive landscape objects as focused objects of photographs were mostly exist in those 4 hotspots.

The *structures* object is the most impressive objects captured in ordinary photos (22.14%) and self-portraits (44.44%) of all hotspots. It is similar result with [11] that "structures" is a type of landscape elements that attracts visitors' attention in a park. The Red Bridge is the most structure taken in respondents' photographs. The Red Bridge is not only captured as an object but also hotspots of vantage points. It is similar result with [13] that bridge is not only an impressive object but also become a sightseeing resource to see space surrounded.

The novelty of this research is the use of geotagged self-portraits to perform impressive landscape spaces or objects. The self-portraits including selfie is a new way in touristic looking in tourism activities [14]. The selfie studies usually consist of people behavior towards time and spaces. But selfie photos combined with GPS tracking was not used. However, the use of self-portraits in photo-based landscape research to identify people's preference is rarely implemented. In this research, the geotagged self-portraits is able to perform impressive landscape spaces by vantage points and hotspots detection although this type of photographs is influenced by subjective tendency of respondents to show him/herself in photos.

CONCLUSION

The result showed that geotagged photographs offer opportunities as objects of research. Especially, the landscape elements and features captured in self-potrait background scene is possible to be the most impressed landscape view that the capturer has tendency to record the moment in photos and include themselves into the picture.

The photographs, both self-portraits and ordinary portraits should be complemented by information of where the photos captured by geotagged information. The photographs that complemented by geotagged information, performed respondents' tendency of places, moments and which landscape view is impressive for them. This information is important to analyze respondents' or visitors' impressed landscape in an ecotourism program.

The current work that has succeeded to identify the concentration of vantage points is useful information for landscape managers in planning attractions in Bukit Kucing Forest. According to its benefits, a geotagged photo-

based study with GIS technology is recommended to be implemented in recreational or ecotourism forests. For a growing ecotourism site such as Bukit Kucing Forest, geotagged photo-based study results help planners optimize existing attractions and create new places of interest. The hotspots of selfies should be considered by management of Bukit Kucing Forest to prevent the view from destructions.

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Understanding Bird Preference on Agroforestry System: Is There a Potential Case for Birdwatching Development?

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Abstract

The main objective of this study is to understand the bird preference on the different types of agroforestry management and the implication on the development of birdwatching as a potential ecotourism. The study was conducted at the agroforestry area of Gubugklakah Village, Malang Regency, East Java Province, Indonesia, from May to November 2016. Five observation sites were chosen: 1) agroforestry developed by ethno-conserving system; 2) agroforestry close to the national park; 3) agroforestry; 4) conventional agriculture area; and 5) houses area. Point Count was applied in this study by determining 5 sampling sites that separated 100-150 m. Survey was conducted once a week and observed every 15 minutes from 6.00 to 9.00 am. The species of bird that observed and heard were noted, identified and result of the field identification was stored in field book. The result shows that the highest Importance Value Index (IVI) was presented by Cave swiftlet and some species that specialized in farmland. Agroforestry area was showing more potential as the birdwatching spot compared to conventional agriculture area and houses area. In addition, agroforestry area showing a high Value of Interest (VOI) that represented a nativity on the birds settler and made it to be the suitable area for birdwatching activities.

Keywords: agroforestry, birdwatching, management, preference.

INTRODUCTION

Birdwatching is one of the most developed ecotourism activity in the world. It is the second popular outdoor tourism in USA that has an amazing development and unexpectedly contributes a great potential for the national economic development. The average revenue generated from birdwatching tourism reaches more than 50.000 USD per year [1]. In addition, other sector, such as transportation, is also predicted to be affected by this activity by reaching 7.6 billion USD. The annual economic benefit of five major birding locations in USA is estimated to reach up to 2.4-40 million USD [2]. Birdwatching could also escalate the species value, as estimated by Munn [3] that each of macaw bird in south Peru could obtain 22.500 to 165.000 USD for its lifetime. In addition, birdwatching offers profitable results both in the conservation and people perspective towards the birds. However, the utilization of bird diversity through birdwatching tourism is still not well-implemented in Indonesia compared to hunting and trading activities as a long term utilization that is not conservative. These facts urge the bird diversity in Indonesia to be a permanent extinction for a long term period [4].

On the other hand, the expansion of urban and agriculture area in Indonesia by forest clearing is directly threaten the birds, including its diversity [5], regeneration, feed availability, and daily activities [6,7]. The agroforestry system has long been known as an original Indonesian agriculture that concerned and emphasized the continuity of agriculture and forestry aspects. According to economical view, agroforestry system is firm, easy to adapt with the nature, competitive, and provides 80% of village revenue [8]. Agroforestry system has better conservation impact on the fauna diversity compared to agriculture system and monoculture forestry. As the multi-habitat landscape, agroforestry plays an important role on mini-ecosystem for some fauna, such as mammals, birds, reptiles, and invertebrates [8]. As much as 60% of bird species with various ecosystem role lives on the agroforestry area [9]. Moreover, there is an interesting tendency in which the birds prefer to live on the transition region between farmland and primary forest as illustrated by agroforestry, compared to other area, such as monoculture forest and active farmland [10,11].

The vegetation planted in agroforestry area consists of herbaceous plants and trees [9] that affected the diversity and visiting time of the

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birds [12]. We estimated that agroforestry system would provide habitat that is more dynamic than other artificial habitat, such as conventional agriculture or forest. An understanding on the distribution and variation of bird species is very important on supporting and developing birdwatching as one of the potential ecotourism, also maintaining the continuity of agroforestry system. Therefore, the main objective of this study is to reveal the bird preference based on agroforestry management and the implication on the potential development of birdwatching.

RESEARCH METHOD

Study Area

Research area was located at the agroforestry area on Gubugklakah village (7'21'-7'31' south latitude and 110'10'-111'40' east longitude), Malang regency, East Java province, Indonesia. Study was conducted on May to November, 2016. Five observation sites were chosen to represent three different habitats, including agroforestry, houses area, and conventional agriculture area. All site research was located in village managed by PT. Perhutani Persero in cooperation with local people. The determination of agroforestry area was based on 3 criteria: 1) Sacred by the local people (agroforestry developed by ethno-conserving system); 2) Located on the edge of national park; 3) Managed regularly. As comparison, we also observed two locations that represented non-agroforestry management: 1) Conventional agriculture area; and 2) Houses area. Conventional agriculture area was mainly planted by monoculture sugar cane plantations, while houses area was consisted of houses located in the same area (Fig. 1). Management area was illustrated by the classification into 4 vegetation types (Table1).

Table 1. Percentage of Vegetation Coverage on 5 Study Sites in Gubugklakah

Classification	Study Sites				
	1	2	3	4	5
Seedling h: 0-1.5 m	60%	40%	45%	70%	40%
Sapling h:≥1.5 d: 10 cm	25%	45%	35%	10%	30%
Pole d: 10-20 cm	15%	10%	15%	5%	5%
Tree d: >20 cm	0%	5%	5%	15%	25%

Notes: h= height; d= diameter; 1= conventional agriculture; 2= houses area; 3= agroforestry developed by ethno-conserving system; 4= agroforestry; 5= forest-near-agroforestry.

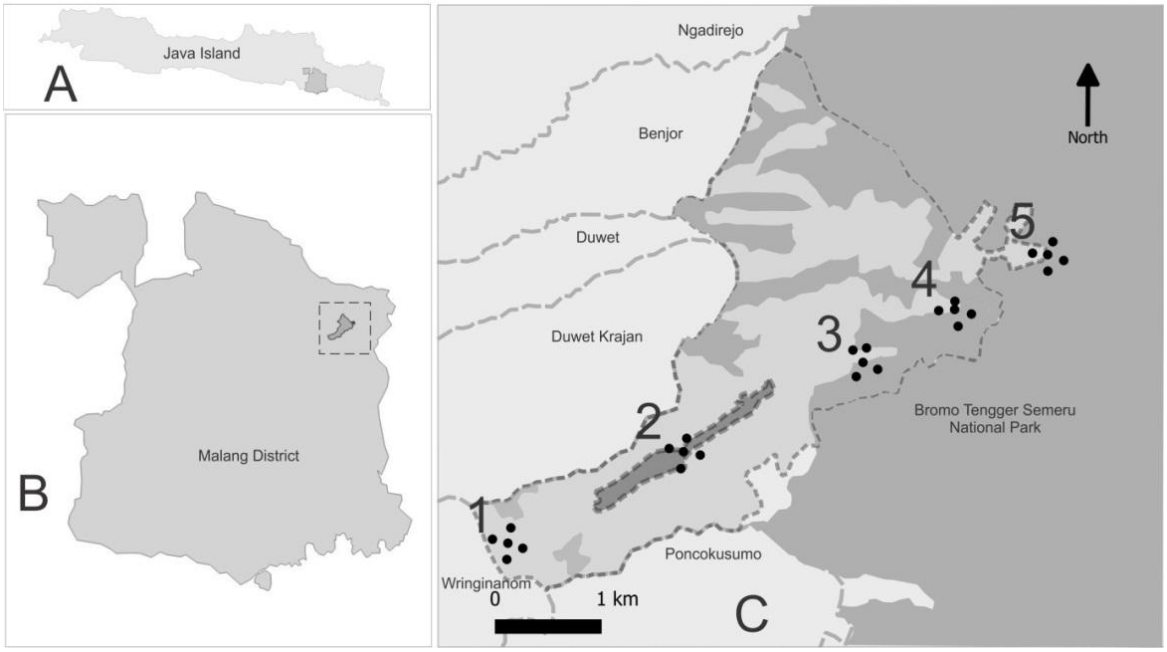

Figure 1. Map of Study Area in Gubugklakah

Description: Black circles show the site points. Number shows classification of sites. A= Java Island, one of Indonesian Archipelago; B= Malang District; C= Gubugklakah (grey and dashed line) with villages and forest around it; 1= Conventional agriculture (light grey); 2= Houses (dark grey and dashed line); 3= Agroforestry with ethno-conserving system; 4= Agroforestry; 5=Forest-near-agroforest. All dark grey inside the Gubugklakah border indicates agroforestry system. Land use and borders were based on Spatial Development Plans map 2016, Office of Public Works and Area Spatial, Malang Regency.

Bird Survey and Vegetation Approach

We applied curve point method on this study. Each survey location was selected 5 point sites (r=20 m) and separated 100-150 m between each point. Survey was conducted once a week for 15 minutes started from 06.00-09.00 am as the most active time for the bird activities, in May 2016 until January 2017 [13]. We recorded all birds that were observed or heard on each site. We avoided working during rainy, cloudy, windy, or foggy situation. Birds that have no contact with the vegetation on the Point Count, but observed during the survey, were classified as Flying Through (FT) and Flying Over (FO). We used Nikon Aculon A30 8x25 binoculars to identify the bird species, digital camera Canon EOS 1100 D + 300 mm Canon lens to take the pictures, and Sony ICD-PX40 digital recorder to record the bird voice. We confirmed the bird voice by replaying and comparing the voice with the online database (http://xeno-canto.org).

Bird was observed on the multiple type-vegetation. We classified the vegetation type that covered each site. Multiple type model on vegetation was estimated by: 1) Occupancy-classification, defined as possibilities for some certain species to live in each vegetation; and 2) Role of use, defined as possibilities for some species that was affected by specific plants.

Data Analysis

Total bird and bird species were analyzed descriptively by using Ms. Excel 2007 to formulize Importance Value Index (IVI). We evaluated the diversity and bird preference by using PAST software. Preference value for three study sites (conventional agriculture, houses, and agroforestry) was obtained by using bi plot analysis. We also designed the bird community as farmland and forest specialist according to the literature. Species that used to live in the forest (more than 50% of its lifetime) was categorized as forest bird. While species that used to live on the open vegetation (more than 50% of its lifetime), such as grass, agriculture area, and houses area, was categorized as farmland bird. Species that lives equally in two habitats, both in the forest and in the farmland, was categorized as generalist. The habitat type and tropic category were analyzed descriptively using Ms. Excel 2007.

We designed the bird community that represented in Value of Interest (VOI) as the birdwatching object with some certain range value (maximum value was 5). The valuation was formed by adding 1 point for each species that met the criteria as follows: 1) law protection [14]; 2) IUCN conservation status was categorized as threatened (Vulnerable, Endangered, Critically Endangered), or Near Threatened [15]; 3) CITES status [16]; 4) endemic in Indonesia [17]; and 5) value of the frequency of attendance. We classified the VOI in 5 ranges = A(4-5); B(3-3.9); C(2-2.9); D(1-1.9), and E(0-0.9). We projected that the high VOI would represent an interesting object for birdwatching tourism that developed in agroforestry system.

RESULT AND DISCUSSION

Bird Observation

We recorded 3783 individual consisted of 67 species, 35 families, and 25 sampling sites. As much as 39% species from total species included as general classification in its vertical distribution. The result represented that most of observed birds could adapt with the wide range of habitat conditions. On the other hand, 16% species from total species lives on seedling-sapling habitat. This species often found on farmland, houses, and agroforestry. As much as 11% species lives on big trees, where it only found in agroforestry and forest. The high value was represented in Fly-over category (approximately 34%), including swiftlet and migratory birds (i.e. Sparrowhawk). Both of them fly in flocks. Sparrowhawk (Chinese Sparrowhawk *Accipiter soloensis* and Japanese Sparrowhawk *Accipiter gularis*) is an annual winter visitor [16]. Besides, Accipitridae was observed at FO condition, flew around in circles following the geothermal flow (soaring) [18].

Cave Swiftlet *Callocalia linchi* has the highest Important Value Index (IVI), 0.32 (Fig. 2). The result demonstrated that Cave Swiftlet takes an important role on the ecosystem of agroforestry in Gubugklakah. Cave Swiftlet usually forms flock, and often lives with other sympatric species. They usually visit the figs trees that fruitting [19]. Swiftlet still flies during the rain; this makes them different with other birds. In fact, rain would trigger insects to fly from the leaves of *Ficus* sp., and make Cave Swiftlet to be more concentrated [20]. During the bright weather, Cave Swiftlet flies low in circles within the open space above the agroforestry.

Sooty-headed bulbul *Pycnonotus aurigaster* was ranked on the second place for IVI (0.25). Most of their lives are spent in the agroforestry area [21]. Therefore, we estimated that Sooty-headed bulbul has adapted well with the availability of food in agroforestry area.

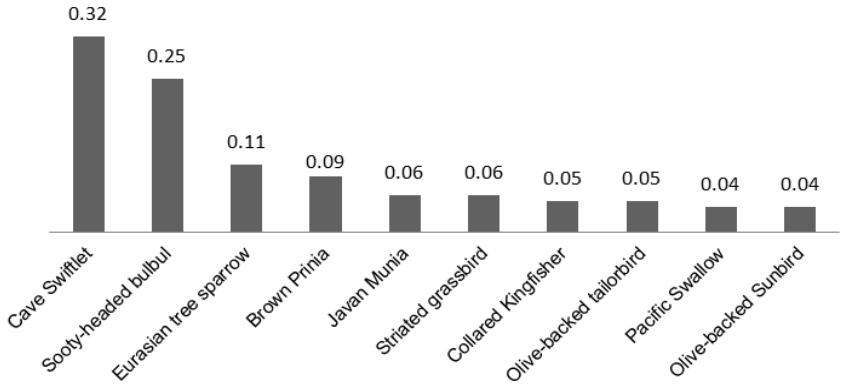

Figure 2. The Ten Highest IVI, Species IVI vary in 67 species (see Supplementary 1)

Thus, it was supported by its classification as omnivorous that has a wide range of food, including fruits and insects [17]. The beak is adapted to hunt insects from perch and the behavior to form flock makes them potential on controlling agricultural pest. *Pycnonotus aurigaster* is adapted to hunt in a flock that supported by vocal communication [20].

The fourth place of IVI rank was occupied by Brown Prinia *Prinia polychroa*, approximately 0.09. They belong to insectivores that lived in agricultural area [17]. On the other hand, the observation result shows a high IVI on Eurasian tree sparrow, a cosmopolitan species that adapted to live in human houses [17]. The other birds, such as Javan Munia, Striated Grassbird, Collared Kingfisher, Olive-backed Tailorbird, and Olive-backed sunbird, are easy to be found on the open space area, agriculture, and houses area. Another species, Pacific swallow, is recorded to be found in a large flock during the rainy season [17].

Bird's Preference

The observation shows that houses and agroforestry area have a high preference value for some certain species (Fig. 3). The houses area was inhabited by the population of Erasian tree sparrow *Passer montanus* that is known to be easily adapted with the human food [17]. Cave swiftlet is usually found in a large flock in the open space, such as conventional agriculture area and agroforestry area that applying ethnic conservation system. The basic of ethnic-conserving system is sacred concept that respecting a tree (*Ficus* sp.) and graveyard area. Moreover, sacred area has long been known to take an important part on conserving the biodiversity around the world [22], and indirectly conserved the high diversity of birds.

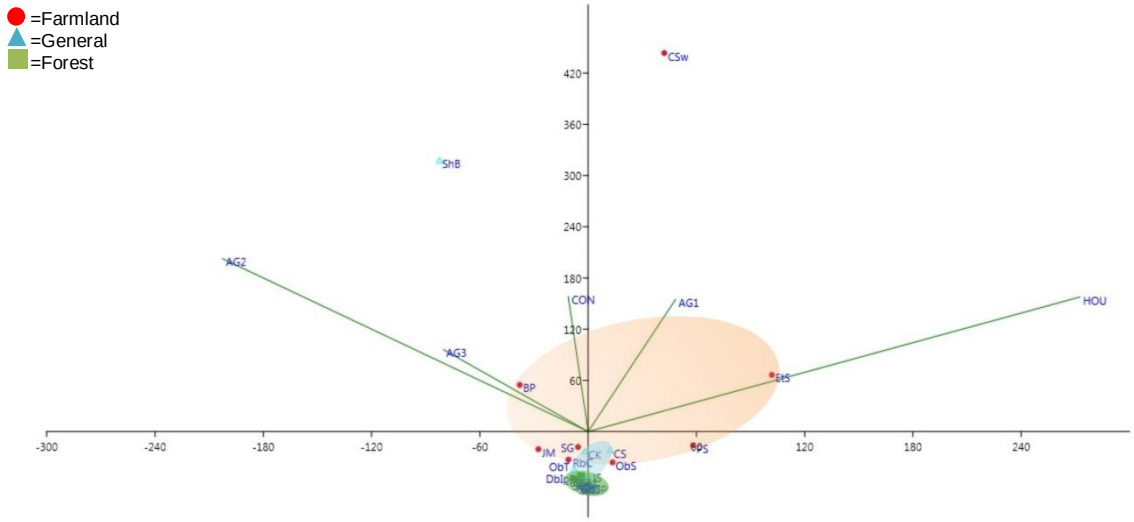

Figure 3. Biplot analysis bird number by point count versus 5 study sites

Description: Study sites are CON= conventional agriculture; HOU= houses; AG1= agroforestry with ethno-conserving system; AG2= agroforestry area; AG3=forest-near-agroforestry. Bird species are represented by their species code (see Supplementary 1).

Conventional agriculture and agroforestry area were mostly visited by farmland birds that hunting insects, such as Sooty-headed Bulbul and Brown Prinia. Interestingly, the preference result illustrated that agroforestry area close to forest was usually visited by several species of birds with different habitat specialization, including farmland, forest, and general (Fig. 4 & 5).

The management area plays an important role on the habitat preference of birds on Gubugklakah. According to Figure 4, almost all area supported the habitat expansion of farmland birds, although forest and generalist birds also found on those area. The fact that the agroforestry area close to natural forest was significantly affected the presence of three species of birds (specialized on the farmland, forest, and generalist), although the number of birds were higher in the agroforestry and other open space area. This presented the quality of bird that visited the agroforestry near the natural forest is much higher compared to the quantity itself. A significant improvement was occurred on the diversity of birds that presence in those area. In fact, the high diversity of bird is supported by the contrast of the habitat between natural forest and agroforestry area. On the other side, agroforestry system that applying ethno-conserving system represented less habitat contrast between figs tree and the agroforestry area. The facts show that contrast of habitat gives a significant effect on the intensity of vegetation and diversity [12,23].

Land Management and Birdwatching Potential

The development of birdwatching has to pay attention on the presence of native species that becomes a key character of an area [24]. Despite the fact that the area management by human is greatly affected the habitats of birds.

Agricultural intensification and settlement area play an important role in threatening the bird diversity in Indonesia [25]. The possibilities of conservation approach need to be considered by policy makers in order to maintain the existence of wild region. Several researchers already proposed some strategies to reduce the effect of agricultural expansion against wild region [23].

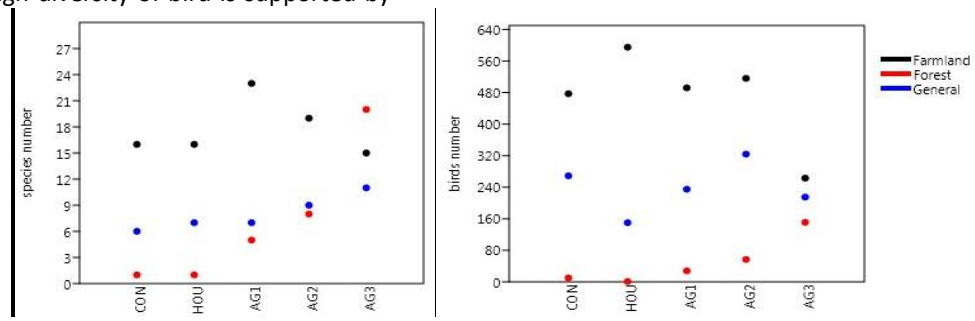

Figure 4. Species and Birds Number in Scatter Plot among 5 Study Sites

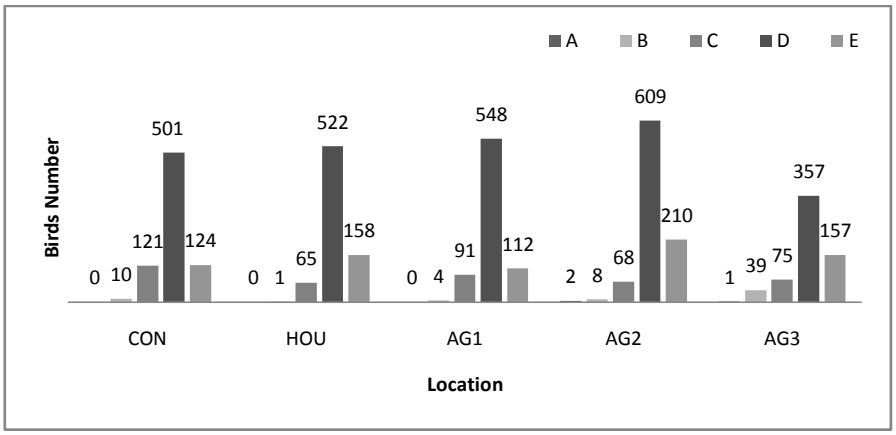

Figure 5. Variation in Bird Number among Study Sites and Classification Number Based on Value of Interest (VOI), a Multi Scale Law Protection, Threatened Status, CITES, Endemicity, and Frequency

Description: Habitat types of study sites included conventional agriculture (CON), houses (HOU), agroforestry with ethno-conservingsystem (AG1), agroforestry (AG2), and forest-near-agroforestry (AG3). A(4-5); B(3-3.9); C(2-2.9); D(1-1.9), and E(0-0.9).

Traditional agroforestry system is a way to reduce the threat on the wildlife. Perennials combined with the short-term corps provide a suitable habitat for birds to do various activities, such as breeding, nesting, and hunting [8,20,26]. Nevertheless, the important value of birds that lives in agroforestry area has a potential to increase more, especially if it supported by birdwatching ecotourism. However, the development of birdwatching needs to be supported by in-depth approach towards the potential sites and native species.

The in-depth approach can be reached from the development on the concept of management and conservation [26]. In line with our study, we suggest the provision of guidance contains of bird classification and some potential spots as a guide on identifying the birds during the activity of birdwatching. A high Value of Interest (VOI), ranging from 2 to 2.9 (C), on conventional agriculture and houses area is caused by the raptor migration track that crossing those area.

Migration track crossed by Chinese Sparrowhawk and Japan Sparrowhawk is very interesting to be observed during the migration season [17]. During those special migration seasons, the bird observers could watch hundreds of eagle in the same time. That view is supported by the area condition that is more open than the agroforestry area. Agroforestry area generally has higher VOI than two other areas. In contrary with the conventional agriculture and houses area, agroforestry area has more species and higher number of birds that belong as native species. It is important to notice that case in order to maximize and develop the potential of birdwatching area that does not affected by the migration season. According to figure 4, the habitat contrast between natural forest and agroforestry invites more native birds to live in those area, such as Javan Hawk Eagle *Nisaetus bartelsi* that is endemic to Java. Agroforestry area combines the perennial habitat that tend to shade and consists of vegetables [12].The high tree is suitable for Javan Hawk Eagle to perch and hunt its prey, such as rodentia among the vegetable farm.

Although it only has fewer quantity compares to other agroforestry area, it has a balance B and C, and also A criteria of VOI, that represented its capability on supporting the life of native species.

Agroforestry area, both ethnic-conserving and conventional system has a high VOI. It indicates that the location is potential to be developed as birdwatching sites. More importantly, the location has unique characters that enable the presence of native birds in a high quantity.

Although we do not discuss the detail of conventional agriculture, but agroforestry system is proven to protect more native biodiversity than the conventional system [9]. Our study provides important information about agroforesty system that could support the birdwatching opportunity. Therefore, conserving the agroforestry area is more recommended than broadening the area of conventional agriculture, because it could complement the needed between human and nature, including crops and wildlife. Management system is considered to be focused on conserving some specific habitats to maintain the dynamic and position of the species as the potential development of the local area.

CONCLUSION

Importance Value Index is relatively high on the Cave swiftlet and some species of birds that specialized on farmland. Preference value shows a different result for different species of birds and there is a trend that indicates the same habitat (agroforestry). Agroforestry area is more potential as an object of birdwatching compared to conventional agriculture and houses area. The interesting part of conventional agriculture and houses area is its role as an annual migration track. The high balance of VOI value in agroforestry area near the natural forest indicates that this region is recommended as a spot for birdwatching, due to the native birds.

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Supplementary 1. Detail Information of Bird Species

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
1	Accipitridae	Black Eagle	*Ictinaetus malaiensis*	BE	21	1.2	LC	2		1	1	0.035854
2	Accipitridae	Chinese Sparrowhawk	*Accipiter soloensis*	CS	86	1.2	LC	2		0.4	0.4	0.034854
3	Accipitridae	Crested serpent eagle	*Spilornis cheela*	CsE	13	1.2	LC	2		0.6	0.6	0.021618
4	Accipitridae	Japanese sparrowhawk	*Accipiter gularis*	JS	15	1.2	LC	2		0.4	0.4	0.016086
5	Accipitridae	Crested honey buzzard	*Pernis ptilorhynchus*	ChB	7	1.2	LC	2		0.4	0.4	0.013972
6	Accipitridae	Javan-hawk Eagle	*Nisaetus bartelsi*	JhE	3	1.2	EN	2	Java	0.4	0.4	0.012914
7	Aegithinidae	Common Iora	*Aegithina tiphia*	CI	5		LC			0.2	0.2	0.007382
8	Alcedinidae	Collared Kingfisher	*Todiramphus chloris*	CK	85	2	LC			1	1	0.052772
9	Apodidae	Cave Swiftlet	*Collocalia linchi*	CSw	1110		LC			1	1	0.323721
10	Apodidae	Pacific swift	*Apus pacificus*	PS	11		LC			0.6	0.6	0.02109
11	Apodidae	Edible-nest Swiftlet	*Aerodramus fuciphagus*	EnS	3		LC			0.2	0.2	0.006854
12	Campephagidae	Small Minivet	*Pericrocotus cinnamomeus*	SmM	48		LC			0.6	0.6	0.03087
13	Campephagidae	Sunda Minivet	*Pericrocotus miniatus*	SM	23		LC		Sumatra & Java	0.4	0.4	0.018201
14	Campephagidae	Pied triller	*Lalage nigra*	PT	12		LC			0.4	0.4	0.015293
15	Campephagidae	Sunda Cuckoshrike	*Coracina larvata*	SC	22		LC			0.2	0.2	0.011876
16	Cettidae	Mountain Tailorbird	*Phyllergates cuculatus*	MT	1		LC			0.2	0.2	0.006325
17	Cisticolidae	Brown Prinia	*Prinia poluchroa*	BP	233		LC			0.8	0.8	0.085834
18	Cisticolidae	Olive-backed tailorbird	*Orthotomus sepium*	ObT	62		LC		Java&Bali	1	1	0.046692
19	Cisticolidae	Common Tailorbird	*Orthotomus sutorius*	CT	10		LC			0.8	0.8	0.026886
20	Cisticolidae	Bar-winged Prinia	*Prinia familiaris*	BwP	4		LC		Indonesia	0.4	0.4	0.013179
21	Cisticolidae	Plain prinia	*Prinia inornata*	PP	8		LC			0.2	0.2	0.008175
22	Columbidae	Spotted Dove	*Spilopelia chinensis*	SD	41		LC			0.8	0.8	0.03508
23	Columbidae	Ruddy Cuckoo-dove	*Macropygia emiliana*	RCd	9		LC			0.6	0.6	0.020561
24	Columbidae	Pink-headed fruit dove	*Ptilinopus porphyreus*	PhFd	9		LC		Indonesia	0.4	0.4	0.0145
25	Columbidae	Grey-cheeked Green-pigeon	*Treron griseicauda*	GcGP	2		LC			0.2	0.2	0.006589
26	Columbidae	Dark-backed Imperial Pigeon	*Ducula lacernulata*	DbIp	1		LC		Indonesia	0.2	0.2	0.006325
27	Cuculidae	Rusty-breasted cuckoo	*Cacomantis sepulcralis*	RbC	36		LC			1	1	0.039819

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
28	Cuculidae	Plaintive cuckoo	*Cacomantis merulinus*	PC	21		LC			1	1	0.035854
29	Cuculidae	Chestnut-breasted malkoha	*Phaenicophaeus curvirostris*	CbM	3		LC			0.4	0.4	0.012914
30	Cuculidae	Oriental Cuckoo	*Cuculus saturatus*	OC	12		LC			0.2	0.2	0.009233
31	Dicaeidae	Scarlet-headed flowerpecker	*Dicaeum trochileum*	ShF	9		LC		Indonesia	0.4	0.4	0.0145
32	Dicaeidae	Blood-breasted Flowerpecker	*Dicaeum sanguinolentum*	BbF	8		LC		Indonesia	0.4	0.4	0.014236
33	Dicruridae	Ashy Drongo	*Dicrurus leucophaeus*	AD	1		LC			0.2	0.2	0.006325
34	Estrildidae	Javan Munia	*Lonchura leucogastroides*	JM	95		LC		Indonesia	1	1	0.055415
35	Estrildidae	Scally-breasted Munia	*Lonchura punctulata*	SbM	8		LC			0.2	0.2	0.008175
36	Hirundinidae	Pacific Swallow	*Hirundo tahitica*	PS	99		LC			0.6	0.6	0.044352
37	Hirundinidae	Striated Swallow	*Hirundo striolata*	SS	48		LC			0.4	0.4	0.02481
38	Hirundinidae	Barn Swallow	*Hirundo rustica*	BS	4		LC			0.2	0.2	0.007118
39	Laniidae	Long-tailed Shrike	*Lanius schach*	LtS	16		LC			0.6	0.6	0.022411
40	Locustellidae	Striated grassbird	*Megalurus palustris*	SG	94		LC			1	1	0.055151
41	Megalaimidae	Flame-fronted barbet	*Psilopogon armillaris*	FfB	69		LC		Indonesia	0.4	0.4	0.030361
42	Megalaimidae	Black -banded Barbet	*Psilopogon javensis*	BbB	37	1.2	NT		Java & Bali	0.4	0.4	0.021902
43	Megalaimidae	Coppersmith Barbet	*Psilopogon haemacephalus*	CB	5		LC			0.2	0.2	0.007382
44	Muscicapidae	Lesser Shortwing	*Brachypteryx leucophrys*	LS	47		LC			0.6	0.6	0.030606
45	Muscicapidae	Sunda Forktail	*Enicurus velatus*	SF	12		LC		Indonesia	0.6	0.6	0.021354
46	Muscicapidae	Javan whistling thrush	*Myophonus glaucinus*	JwT	6		LC		Java & Bali	0.2	0.2	0.007647
47	Muscicapidae	Little pied flycatcher	*Ficedula westermanni*	LpF	4		LC			0.2	0.2	0.007118
48	Muscicapidae	Snowy-browed flycatcher	*Ficedula hyperythra*	SbF	2		LC			0.2	0.2	0.006589
49	Nectariniidae	Olive-backed Sunbird	*Cinnyris jugularis*	ObS	53	1.2	LC			1	1	0.044313
50	Nectariniidae	Streaky-breasted spiderhunter	*Arachnothera affinis*	SbS	1	1.2	LC			0.2	0.2	0.006325
51	Paridae	Great Tit	*Parus major*	GT	22		LC			0.6	0.6	0.023997
52	Passeridae	Eurasian tree sparrow	*Passer montanus*	EtS	284		LC			1	1	0.105376
53	Pellorneidae	Horsfield's Babbler	*Malacocincla sepiaria*	HB	2		LC			0.2	0.2	0.006589
54	Phasianidae	Green junglefowl	*Gallus varius*	GJ	5		LC		Indonesia	0.6	0.6	0.019504

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
55	Phylloscopidae	Mountain Leaf Warbler	*Phylloscopus trivirgatus*	MlW	20		LC			0.2	0.2	0.011347
56	Picidae	Fulvous-breasted Woodpecker	*Dendrocopos macei*	FbW	23		LC			1	1	0.036383
57	Pittidae	Banded Pitta	*Hydrornis guajana*	BP	1	1.2	LC	2	Indonesia	0.2	0.2	0.006325
58	Podargidae	Javan Frogmouth	*Batrachostomus javensis*	JF	1		LC			0.2	0.2	0.006325
59	Psittacullidae	Yellow-throated hanging parrot	*Loriculus pusillus*	YtHp	3		NT	2	Java & Bali	0.4	0.4	0.012914
60	Pycnonotidae	Sooty-headed bulbul	*Pycnonotus aurigaster*	ShB	820		LC			1	1	0.247062
61	Pycnonotidae	Yellow-vented Bulbul	*Pycnonotus goiavier*	YvB	41		LC			0.6	0.6	0.02902
62	Sittidae	Blue Nuthach	*Sitta azurea*	BN	2		LC			0.2	0.2	0.006589
63	Strigidae	Sunda-scops Owl	*Otus lempiji*	SsO	2		LC	2		0.4	0.4	0.01265
64	Sturnidae	Short-tailed Starling	*Aplonis minor*	StS	13		LC			0.2	0.2	0.009497
65	Timallidae	Crescent-chested Babbler	*Stachyris melanothorax*	CcB	4	1.2	LC		Indonesia	0.4	0.4	0.013179
66	Turdidae	Scally Thrush	*Zoothera dauma*	ST	2		LC			0.2	0.2	0.006589
67	Turnicidae	Barred Buttonquail	*Turnix suscitator*	BB	2		LC			0.4	0.4	0.01265
68	Zosteropidae	Oriental white-eye	*Zosterops palpebrosus*	Owe	2		LC			0.2	0.2	0.006589

Notes: [1]Law [14], [2]IUCN status [15] [3]CITES status [16], [4]Endemic status [17].

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Analysis of Tourist Satisfaction to Tourist Attraction Quality in Kediri Regency, East Java

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Abstract

This research aims to determine tourist satisfaction towards service quality which involves attraction, accommodation, accessibility, facility, information, advertisement, and utilities availability in Kediri Regency Tourism Attraction. Importance Performance Analysis (IPA) research method was utilized to determine tourist response regarding tourism attributes. The attributes are mapped according to importance and performance level. Then the attributes are mapped according to its respective quadrant, thus it could be exhibited which variables requiring improvement or further attention. Based on IPA diagram plotting result, Temple of Surowono and Temple of Tegowangi possesses 8 out of 29 attributes, while Gereja Tua Puh Sarang possesses 1 out of 29 attributes requiring service improvement. Attributes in Quadrant I are included in primary priority which is important for cultural tourism. This attributes requires more attention in order to increase tourist satisfaction.

Keywords: Cultural Tourism Attraction, Customer Satisfaction, Quality.

INTRODUCTION

Tourist attraction features destinations where visitors could refresh themselves or relax [1]. Tourist Attraction in each town or district must possess a main attraction that interests the visitors/tourists, both local and international visitors. It should be balanced by improving service quality. The success of a tourism activity is largely determined by services quality levels provided to visitors/tourists as reliable service quality is directly proportional to their satisfaction. If visitors/tourists satisfaction is met, it is hoped that their appreciation would encourage efforts to improve services [2].

Satisfaction level could be interpreted by measuring the difference between services provided and the human resources orientation compared to reality and tourist expectation. Success level is determined by service satisfaction level. Recipients' satisfaction levels (tourists / visitors) will be achieved if they receive services in accordance to their expectation [3,4,5]. The level of tourist satisfaction with the service is an important factor in developing a service delivery system responsive to tourists needs [6,7,8]. Satisfaction depends on two factors: consumer expectation and service quality perceived by consumers [9].

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Tourist satisfaction is a primary factor which creates good business climate. It could be done by improving service quality and maintaining facilities availability. Improving services and maintaining facility should be conducted to entertain the tourists better and encourage them to revisit it in the future. Good tourist attraction services and facility would encourage visiting tourist to revisit the tourist attraction. There is various tourist attraction potential in Kediri Regency, East Java Indonesia, which is capable of attracting tourist. Those are cultural tourism which is leading tourism destination types in Kediri regency. It involves the following tourism destinations: Temple of Surowono, Gereja Tua Poh Sarang, Petilasan Sri Ari Joyoboyo, and Temple of Tegowangi. Therefore, this research aims to analyze the tourist satisfaction towards the service quality which involves attraction, accommodation, accessibility, facility, information, advertisement, and utilities availability in Kediri Regency Tourism Attraction.

RESEARCH METHOD

Study Site and Sampling

This study was conducted in Kediri Regency. Intensive study was done in Temple of Surowono, Gereja Tua Poh Sarang, Petilasan Sri Ari Joyoboyo, and Temple of Tegowangi. These sites are known for their cultural tourism.

This study used sampling techniques to determine the respondents' non-probabilistic using Judgment Sampling technique. The respondents are the tourist object visitors with age range between 17-60 years old, with a total

96 respondents. The tools used are Krejcie table on 0.05 alpha errors. Results of validity and reliability test are valid and reliable.

Data Analysis

Important Performance Analysis (IPA)

The process was followed by utilizing Importance Performance Analysis (IPA), a technique to measure importance and performance level which is useful for developing a program or an effective marketing strategy. This method is used to analyze the interest level and customer satisfaction performance [10-13].

Likert Scale

The attributes examined were measured using Likert scale. After determining scale range, Cartesian diagram consisting of the X-axis and Y were utilized to measure importance level. Assessment is based average result of interest level and performance with number of respondents. Formula used for this assessment is:

$$xj = \frac{\sum Xij}{n} \qquad Yj = \frac{\sum Y\ ij}{n}$$

Description:

X_j : Average score of performance level for j attribute
Y_{ij} : Average score of importance level for j attribute
X_{ij} : Respondent score of performance level attribute i and j
Y_{ij} : Respondent score of importance level attribute i and j
N : Respondent number

Cartesian Diagram

Cartesians diagram using four quadrants was utilized. Calculation result was registered into Cartesian diagram (Fig. 1) [14]. X-axis exhibits performance level and Y-axis shows the importance level.

$$X = \frac{\sum_{i=1}^{n} xj}{k} Y = \frac{\sum_{i=1}^{n} xj}{k}$$

Description:

X : Mean of performance level average quality
Y : Mean of importance level average quality
K : Number of attributes

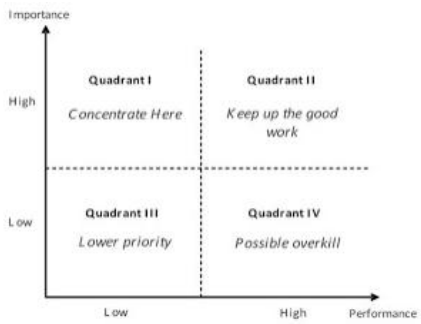

Figure 1. Cartesians Diagram of IPA

RESULT AND DISCUSSION

Kediri possesses total area of 1386.05 km^2 or 1,386.05 ha with diverse tourism potential which includes Surowono Temple, Puh Sarang Old Church, Petilasan Sri Ari Joyoboyo, and Tegowangi Temple cultural tourism. Afore mentioned locations, possessed unique characteristic and capable of attracting local and international tourists.

Temple of Surowono

Temple of Surowono is located in Canggu Village, Badas District, Kediri. This temple is a historic and important monumental building of the Majapahit Kingdom. The existence of this temple is integrated with nearby tourism place of interest. Temple of Surowono is managed by Kediri Department of Tourism. Distance between Kediri city proper to tourism attraction is 30 km. The required time to travel to tourist attractions is 52 minutes from Kediri.

Analysis result of IPA perception rating is based on questionnaire distributed at Temple of Surowono. Four quadrants and coordinate points for each element were exhibited in Cartesians quadrant. Based on tourist's perception regarding Temple of Surowono, there are 29 variables that became basis of perception assessment (Table 1). Those variables divided to 4 types based on its priority level (Fig. 2).

Table 1. Attributes For Importance Performance Analysis

Variables	
(1) Available security personnel	(16) Available Rest room facility
(2) Authentic natural attraction	(17) Available Trash cans facility
(3) Available local cultural attraction	(18) Available Tourism Center and service
(4) Available local food and beverage	(19) Available Worship/ prayer facility
(5) Available unique local souvenirs	(20) Available Health post
(6) Natural attraction beauty	(21) Available ATM and Money Changer
(7) Unique culture	(22) Available Gas Station
(8) Varied tourist attraction	(23) Available brochure/ pamphlet
(9) Hotel and inns availability	(24) Available traffic sign
(10) Available dining area	(25) Available Travel agent or guide.
(11) Available shopping area	(26) Wi-Fi availability
(12) Road condition to Tourist Attraction	(27) Available Electricity
(13) Available transport method	(28) Available clean water
(14) Ease in visiting Tourist Object	(29) Available network (signal strength).
(15) Available parking lot	

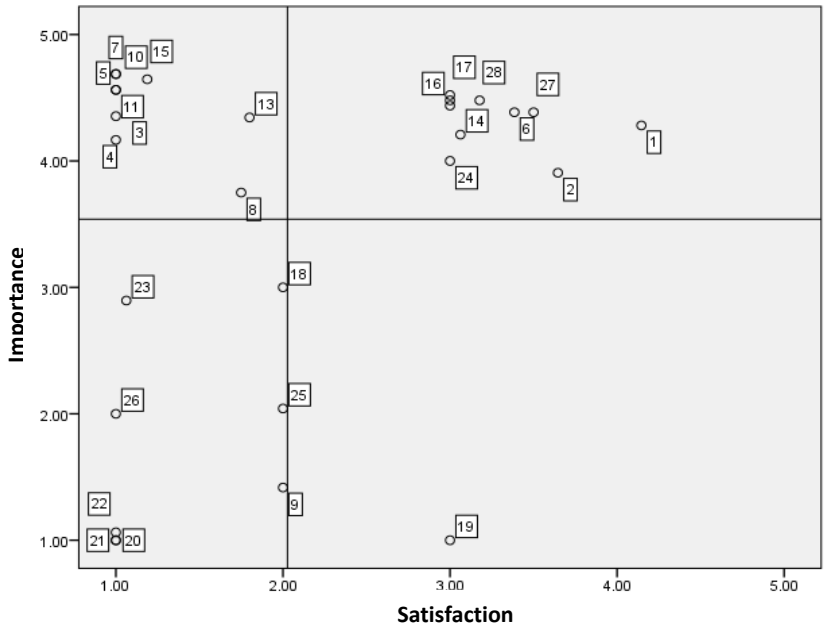

Figure 2. Quadrant of Importance Performance Analysis (IPA) on Surowono Temple

Mapping on Cartesian diagram exhibited number of attributes. Based on the figure, there are attributes that requires improvement and maintenance, divided into quadrants (A, B, C and D) according to suitability level between tourist importance level and Tourist Attraction performance level.

Quadrant I

Quadrant I contains attributes considered important by the tourists, nevertheless their service quality has not met their expectation [14,15]. Tourist Attraction party should endeavor to improve attributes in Quadrant I in order to increase customer satisfaction. Based on Cartesians diagram, it exhibits the following attributes:

(3) Available local cultural attraction
(4) Available local food and beverage
(5) Available unique local souvenirs
(7) Unique culture
(8) Varied tourist attraction
(10) Available dining area
(11) Available shopping area
(13) Available transport method to tourist attraction
(15) Available parking lot

This indicates that services performance provided in Temple of Surowono based on 9 attributes is considered not meeting visitor's expectation. Thus these items become the main priority scale for Temple of Surowono to improve. One quadrant contains main attributes that do not provide satisfaction to tourist expectations [16,17], therefore the following items needs to be improved: availability of traditional cultural attractions [18] such as *Jaranan* art containing elements of magic in the dance. We also recommend to develop shopping facility which offers local souvenirs as well as culinary facilities with various kinds of region's specialty food and drink, such as *Gethuk* bananas which Kediri's specialty. Availability mode of transportation to tourism location for local travelers and foreign tourists and parking lot would provide traveler satisfaction. These items should be top priority for Temple of Surowono management to improve.

Quadrant II

Quadrant II contains attributes considered important by the tourists, and met their expectation. Therefore it resulted in higher tourist satisfaction. With high tourist satisfaction level in this Quadrant, Tourist Attraction party should maintain these attributes in order to satisfy the tourist according to their expectation [14,15]. Attributes contained in this quadrant:

(1) Available security personnel
(2) Authentic natural attraction
(6) Natural attraction beauty
(14) Ease in visiting Tourist Object
(16) Available Rest room facility
(17) Available Trash cans facility
(24) Available road signs
(27) Available electricity

(29) Available communication Network (signal strength)

This indicates that nine attributes are considered to have a high importance and performance [16,17]. Thus these attributes need to be maintained by Temple of Surowono management, so visitors will leave good view on Temple of Surowono and visitor satisfaction is maintained.

Quadrant III

Quadrant III contains attributes tourists considered unimportant and possess dissatisfying performance level from Tourist Object party [14,15]. Nevertheless, these aspects could become more important in the future. Therefore Tourist Attraction party should consider improving the attributes. The following attributes are exhibited in this quadrant:

(9) Hotel and inns availability
(18) Available Tourism center
(20) Health post availability
(21) ATM and Money Changer availability
(22) Gas Station availability
(23) Available Tourist Attraction advertisement (brochure/pamphlet)
(25) Travel agent availability (Tourism agent/guide)
(26) Wi-Fi availability

This indicates that eight attributes are considered less important by the visitors, but has been well maintained in Temple of Surowono. Indicators located in this quadrant are not a problem even if it's not improved by management as visitors consider those are of no importance. The attributes possess marginal influence on tourist satisfaction due to relatively low priority [16,17].

Quadrant IV

Quadrant IV contains attribute the tourists considered unimportant and overly maintained or possess overly high performance level [14,15]. There is no need for further maintenance. Attribute included in this quadrant is (19) Worship/prayer places availability. This attribute is provided by Temple of Surowono with excellent facilities which satisfy visitors, but it still need to be maintained in order to have positive impact on visitor satisfaction [16,17].

Gereja Tua (Ancient Church) Puh Sarang

Gereja Tua Puh Sarang is located in Pohsarang Village, Semen Disctrict, Kediri. Gereja Tua Puh Sarang is Heritage Church built by Ir. Henricus Mc Claine Pont. This church features unique architectural style by combining Javanese, Batak, and European architecture. Support facilities are Maria Lourdes Cave, Golgotha Via Crucis, Taman Hidangan Kana, Mount Tabor Campgrounds, Hall, Bethlehem and Hening House. Distance between Gereja Tua Puh Sarang and Kediri is 10 km and requires 24 minutes of travel time. Cartesian diagram for the attributes in Gereja Tua Puh Sarang mapped in Figure 3.

Quadrant I

Quadrant I contains attributes considered important by the tourists, nevertheless their service quality has not met their expectation [14,15].Tourist Attraction party should endeavor to improve attributes in Quadrant I in order to increase customer satisfaction [16, 17]. Based on Cartesians diagram, it exhibits the attribute (13) Transport node availability to Tourist Attraction.

This attribute should become top priority improvement to enable Gereja Tua Puh Sarang visitors travel to location. Availability of transport node in a tourist location is of particular concern for tourism manager, as adequate roadwork would be factors that attract tourists [1].

Quadrant II

Quadrant II contains attributes considered important by the tourists, and met their expectation. Therefore it resulted in higher tourist satisfaction. With high tourist satisfaction level in this Quadrant, Tourist Attraction party should maintain these attributes in order to satisfy the tourist according to their expectation [14,15]. Attributes contained in this quadrant:

(1) Available Security personnel
(2) Authentic natural attraction
(3) Available Unique local cultural attraction
(4) Available Local food and beverage
(5) Unique local souvenir
(6) Beautiful Natural Attraction
(10) Available dining area
(11) Available Shopping area facility
(12) Road condition to Tourist Attraction
(14) Ease in reaching Tourist Attraction
(16) Available Restroom facility
(17) Available Trash can
(24) Available traffic sign
(27) Available Electricity
(28) Available clean water
(29) Available communication network (signal strength)

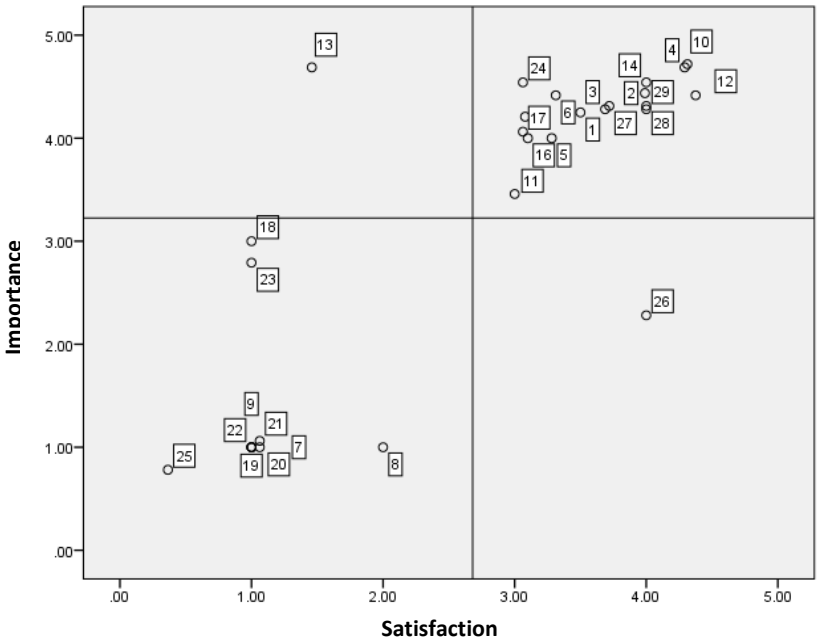

Figure 3. Quadrant of Importance Performance Analysis (IPA) on Gereja Tua Puh Sarang

This result indicate that 16 of these attributes are considered to be of high importance and performance [16,17]. Thus these attributes need to be maintained by Gereja Tua Puh Sarang management. Gereja Tua Puh Sarang should be able to maintain their achievements and improve the performance quality, for the tourists to leave good impression and maintain their satisfaction.

Quadrant III

Quadrant III contains attributes tourists considered unimportant and possess dissatisfying performance level from Tourist Object party [14,15]. Nevertheless, these aspects could become more important in the future; therefore Tourist Attraction party should consider improving the attributes. The following attributes are exhibited in this quadrant:

(7) Local culture
(8) Available Tourism attraction variety
(9) Available Hotel and inn
(18) Available Tourism Center and service
(19) Available Worship/ prayer facility
(20) Available Health post
(21) Available ATM and Money Changer
(22) Available Gas Station
(23) Available Tourist Attraction advertisement (brochure/ pamphlet)
(25) Available Travel agent or guide.

Results showed these 10 attributes are considered less important by the visitors, but is maintained well in Gereja Tua Puh Sarang [16,17]. Regardless of being low importance, it still requires proper maintenance. The attributes that are in this quadrant would remain in good condition regardless of its maintenance status as these are considered less important by the visitors and its maintenance have marginal influence on the visitors satisfaction level because of the relatively low priority.

Quadrant IV

Quadrant IV contains attribute the tourists considered unimportant and overly maintained or possess overly high performance level [14,15]. There is no need for further maintenance. Attribute included in this quadrant is (26) Wi-Fi network availability.

Attributes that are in quadrant IV are attributes maintained very well in Gereja Tua Puh Sarang, but considered less important therefore it seems excessively done [16,17]. Gereja Tua Puh Sarang is advised to allocate its resources to main priority.

Petilasan Sri Ari Joyoboyo

Petilasan Joyoboyo Sri Ari is located in Menang Village, Pagu District, Kediri. Petilasan Raja Besar Kediri consists of two main parts: Pamuksan Building and Sendang Tirta Kamandanu. On certain nights there are people who bring *Seserahan* (offering) for good fortune in every intention. Pamuksan building is believed by local people as a *Moksa* (release from worldly things) of the King of Kediri, Sri Ari Jayabaya.

Petilasan Sri Ari Joyoboyo distance from Kediri city is 13 km and takes about 30 minutes.

Analysis result of IPA perception rating is based on questionnaire distributed at Petilasan Sri Ari Joyoboyo. Cartesians quadrant based on its priority level showed in Figure 4.

Quadrant I

Quadrant I contains attributes considered important by the tourists, but their quality has not met their expectation. Tourist Attraction should endeavor to improve attributes in Quadrant I in order to increase customer satisfaction [14,15]. Based on Cartesians diagram, it exhibits the following attributes :

(4) Local food and beverage availability
(8) Varied offered tourism activity
(10) Available dining facility
(12) Available dining facility
(13) Road condition to Tourist Attraction
(18) Transport node availability to Tourist Attraction.

This indicates performance services provided by Petilasan Sri Ari Joyoboyo management on these six attributes is a top priority, as it is considered to have a high interest rate but possess lower performance levels [16,17]. Items requiring improvement is availability of including distinctive local traditional attraction [18] such as *Jaranan* which contains elements of magic in the dance. Dining facility which provides various Kediri regional specialty food and drink including Gethuk banana. Availability of transport mode to tourist attraction for local travelers and foreign tourists, and adequate roadwork can provide satisfaction to the traveler. Adding an information center, enables travelers to get to find out more locations in Sri Ari Joyoboyo.

Quadrant II

Quadrant II contains attributes considered important by the tourists, and met their expectation [14,15]. Therefore it resulted in higher tourist satisfaction. With high tourist satisfaction level in this Quadrant, Tourist Attraction party should maintain these attributes in order to satisfy the tourist according to their expectation. Attributes contained in this quadrant are:

(1) Available security personnel
(2) Authentic natural attraction
(3) Unique local cultural attraction
(6) Natural attraction beauty
(7) Available Unique local culture
(15) Available Parking lot
(16) Available Toilet facility
(17) Available Trash can
(24) Available Traffic sign
(27) Available Electricity
(28) Available Clean water
(29) Available Communication network availability (signal strength)

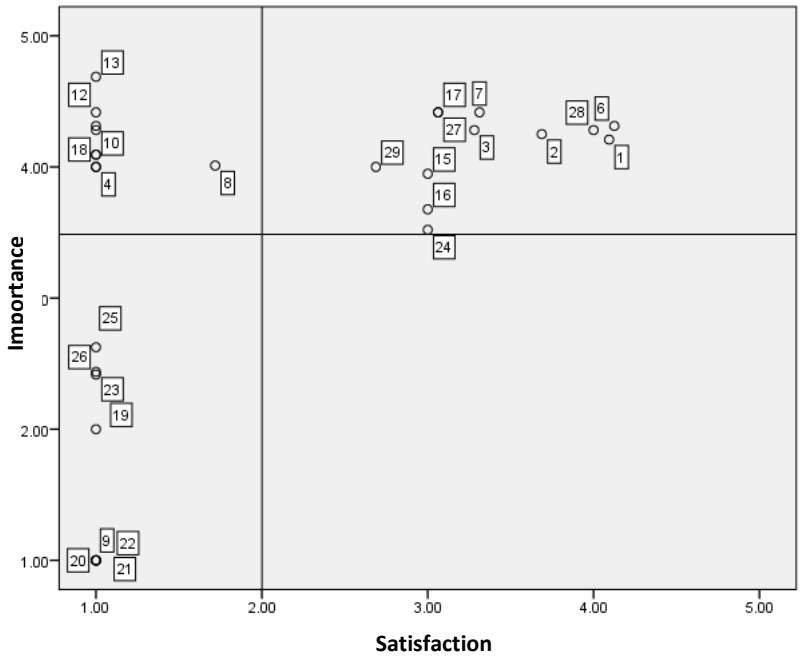

Figure 4. Quadrant of Importance Performance Analysis (IPA) on Sri Ari Joyoboyo

The results indicates these 12 attributes are considered to have high importance and performance rate [16,17]. Thus these attributes require to be maintained in Sri Ari Joyoboyo. This tourist attraction should be able to maintain its achievements and improve the performance quality of relevant attributes in the future.

Quadrant III

Quadrant III contains attributes tourists considered unimportant and possess dissatisfying performance level from Tourist Object party [14,15]. Nevertheless, these aspects could become more important in the future. Therefore Tourist Attraction party should consider improving the attributes. The following attributes are exhibited in this quadrant :

(9) Available Hotel and Inn
(19) Available Prayer/ Worship facility
(20) Available Health post
(21) Available ATM and Money Changer
(22) Available Gas station
(23) Available Tourist attraction advertisement (brochure/pamphlet)
(25) Available Tourism agency (travel bureau, guide)
(26) Available Wi-Fi network

These indicates that these eight attributes considered less important by the visitors, but is provided very well in Sri Ari Attractions Joyoboyo [16,17]. Regardless of being low importance, it still requires proper maintenance. The attributes that are in this quadrant would remain in good condition regardless of its maintenance status as these are considered less important by the visitors and its maintenance have marginal influence on the visitors satisfaction level because of the relatively low priority.

Quadrant IV

Quadrant IV contains attribute the tourists considered unimportant and overly maintained or possess overly high performance level. There is no need for further maintenance [16,17]. This Quadrant does not possess any item nor attributes.

Tegowangi Temple

Temple of Tegowangi is a temple located in Tegowangi Village, Plemahan district, Kediri. Tegowangi Temple occupies spacious and open area. This archaeological area is well maintained. Honey bee farm in entrance area is owned by local residents which add more value to this tourist attraction. The temple is decorated with 14 panels of Sudamala story. Inside temple chambers are carvings with dragon-shaped fountains. Temple Tegowangi distance to Kediri is 28 km and requires 45 minutes of travel.

IPA perception rating Analysis result is based on questionnaire distributed at Temple Tegowangi. Four quadrants and their coordinate points of each element were exhibited in the form of Cartesians quadrant (Fig. 5).

Quadrant I

Quadrant I contains attributes considered important by the tourists, but their quality has not met their expectation [14,15]. Tourist Attraction should endeavor to improve attributes in Quadrant I in order to increase customer satisfaction. Based on Cartesians diagram, it exhibits the following attributes:

(4) Available Local food and beverage
(8) Varied offered tourism attraction
(10) Available dining facility
(11) Available shopping area
(12) Available dining facility
(13) Available transportation node to Tourist Attraction
(14) Ease in reaching Tourist Attraction
(24) Available road sign

This indicates services performance in Temple Tegowangi Attractions on these 8 attributes do not meet visitor's expectations. Therefore these attributes should be main improvement priority for Temple Tegowangi management [16,17]. This quadrant contains the main attributes for Temple Tegowangi satisfaction. It is necessary to improvement the following aspects: availability of traditional cultural attractions [18] such as street art which contains magical elements in the dance. Shopping facilities is offering regional specialty souvenir. Dining facilities equipped with various types of regional food and drink. Availability of transportation to facilitate tourist and increase signs pointing toward tourism attractions making it easier for tourists to reach Tegowangi Temple.

Quadrant II

Quadrant II contains attributes considered important by the tourists, and met their expectation [14,15]. Therefore it resulted in higher tourist satisfaction. With high tourist satisfaction level in this Quadrant, Tourist Attraction party should maintain these attributes in order to satisfy the tourist according to their

expectation. Attributes contained in this quadrant are:

(1) Available security personnel
(2) Authentic natural attraction
(6) Natural attraction beauty
(7) Available unique local culture
(15) Available parking lot
(16) Available restroom facility
(17) Available trash can facility
(27) Available electricity
(28) Available clean water
(29) Available communication network (signal strength).

These results indicate 10 attributes are considered to have high importance and performance rate [16,17]. These attributes performance needs to be maintained in Temple Tegowangi. The management should maintain and improve performance quality of attributes relevant in the future, allowing visitors to leave good impression on Temple Tegowangi and maintain their satisfaction.

Quadrant III

Quadrant III contains attributes tourists considered unimportant and possess dissatisfying performance level from Tourist Object party [14,15]. Nevertheless, these aspects could become more important in the future; therefore Tourist Attraction party should consider improving the attributes. The following attributes are exhibited in this quadrant:

(9) Available Hotel and Inn
(18) Available transportation node to Tourist Attraction
(19) Available prayer/worship facility
(20) Available health post
(21) Available ATM and Money Changer
(22) Available gas station
(23) Tourist attraction advertisement availability (brochure/pamphlet)
(25) Tourism agency availability (travel bureau, guide)
(26) Wi-Fi network availability

This indicates 9 attributes regarded as low importance by tourists while it is provided well in Temple Tegowangi [16,17]. Regardless of being low importance, it still requires proper maintenance. The attributes that are in this quadrant would remain in good condition regardless of its maintenance status as these are considered less important by the visitors and its maintenance have marginal influence on the visitors satisfaction level because of the relatively low priority.

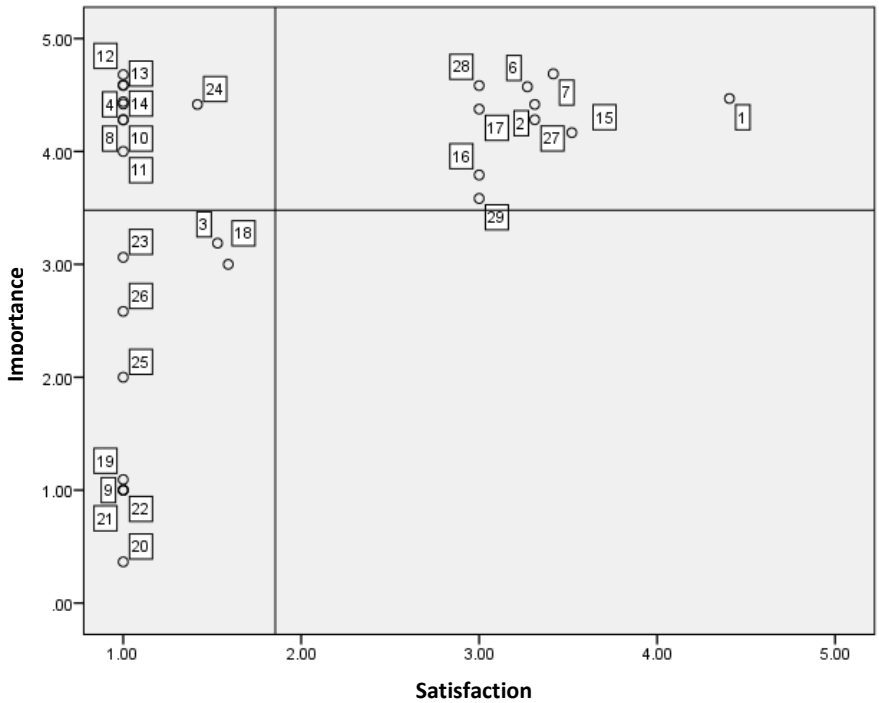

Figure 5. Quadrant of Importance Performance Analysis (IPA) on Tegowangi Temple

Quadrant IV

Quadrant IV contains attribute the tourists considered unimportant and overly maintained or possess overly high performance level. There is no need for further maintenance [14,15]. This Quadrant does not possess any item nor attributes.

CONCLUSION

Based on Importance Performance Analysis (IPA) result includes 29 attributes. The attributes are attraction, accommodation, accessibility, facility, information, advertisement, and utility. Therefore it could be concluded that:

Temple of Surowono identified for possessing 8 attributes included in improvement priority. It requires accommodation facility such as dining and shopping area. Temple of Surowono also requires attractions which involve local culture attraction, varied cultural attraction, and souvenirs. Accessibility aspects requiring improvement are road condition, transport node availability and parking lot.

Gereja Tua Puh Sarang identified for possessing 1 attribute included in improvement priority, such as road network condition and transportation node to tourist attraction. Sri Ari Joyoboyo identified for possessing 5 attribute included in improvement priority, which involves the following attributes: adding dining facility, attraction variation, accessibility improvement such as road network condition and transport node availability to tourist attraction.

Temple of Tegowangi was identified for possessing 8 attribute included in improvement priority, which involves the following attributes: Adding dining facility, shopping area, adding more varied attraction, improving accessibility by repairing road network condition and adding transportation node to tourist attraction.

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Evaluating Environmental Service of Trisula Waterfall as Nature-based Tourism Attraction in Bromo Tengger Semeru National Park

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Abstract

Tourism activity in Trisula waterfall (locally called Coban Trisula) is growing significantly. The environmental management is important to perform the sustainable use of waterfall as tourism attraction. The aim of the research is to identify the ecosystem services of Trisula waterfall. In this study, three indices were calculated, namely Environmental Services Index, Hemeroby Index, and Naturalness index. This study found that the use of lands and natural resources in Trisula waterfall was low compared the upper and lower area. Lower and upper area was used for intensive agriculture and daily needs by local community. Those activities were influencing the environmental services of Trisula waterfall. Management towards sustainable use of Coban Trisula area was required. It is also important and should be able to promote security and satisfaction aspects for tourist. Anthropogenic activities such as plantation activities should be controlled by a persuasive approach to minimize disruption to the ecosystem. There are needs for environmental management to ensure the sustainability use of waterfall resources and its surrounding area.

Keywords: sustainable tourism, waterfall management, water conservation.

INTRODUCTION

Recently tourism grows significantly in East Java [1]. Tourism development in remotes area is one of the opportunities for local economic development [2]. Such tourism is especially important to support biodiversity conservation in these areas. In this activity, planner and manager of tourism are promoted to protect natural resources in these areas [2]. Many scholar has reported that conservation of natural resources is important aspect in tourism sustainability and development [2,3].

Waterfall is one of the natural resources which are widely explored by tourism planner and manager as tourism destination [4]. Waterfall offer spectacular natural attraction which is provides numerous attractions for tourist, e.g. beauty landscape, waterfall phenomena, vegetation, fresh air and outdoor experiences. As an aquatic ecosystem, the waterfall has several functions such as provide clean water, control pollution, and supporting with some important chemical substances in the ecosystem. These functions will further support aquatic environmental services which consist of provisioning, regulating, cultural and supporting services [5].

For the purposes of sustainability, the management of waterfall is crucial. It is especially important to consider the impact of human in waterfall ecosystem. Some human activities in the ecosystem can alter and reduce environmental services of natural resources [6]. These can cause a decline of interest for waterfall tourism. Scholar point out that tourism development contributes to the environmental degradation. In the perspective of sustainable tourism planning and destination, designing proper environmental and resources usage is important [2]. In such case, evaluation of environmental status will contributes to the planning and decision making stages of the natural object for tourism purposes [6,7].

Concerns to the environmental aspect in nature-based tourism destination are growing since there are numerous problems in tourism destination. Many nature-based tourism destinations have been reported under tourism activity pressure, including habitat degradation, pollution, wildlife reduction and extinction, exotic species introduction and invasion. Coban Trisula is one of waterfall in Bromo Tengger Semeru National Park, which area recently found and promoted as tourism destinations. In the situation where interest to visit nature is growing rapidly, managing water fall is important. As far, there is no environmental evaluation which is able to be used in management planning. The aim of the research is to describes the impact of human interaction to waterfall ecosystem area.

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RESEARCH METHOD

Study Site

Trisula Waterfall (Coban Trisula) located in Bromo Tengger Semeru National Park with altitude about 1.260-1.560 m above sea level. Field survey was set up at three area of Trisula Waterfall (Fig. 1). Geographically, these area were located at upper area (8°0'2.9808" S 112°52' 14.43" E), waterfall point (8°0'24.8004" S 112° 51'40.7016" E), and lower area (7° 59'50.7336" S 112°52'23.8692" E). Trisula waterfall is part of the lower tropical mountains which are numerous plant species. Some notable species in waterfall area includes *Engelhardia spicata*, *Acer laurinum*, and *Turpinia*. Many species seems to be similr with the upper mountain forest [8].

As far, the waterfall has been visited by tourist, but the visitation number was still low. In the upper area, the water was used by local people in Ngadas for some purposes. According to National Park document related to national park area management, the Trisula waterfall is part of the National Park Resort Management with area about 5,222.75 Ha (Fig. 2).

Methods

Observation was set up at upper area of water fall, waterfall point and lower area of waterfall. Environmental aspect of Trisula waterfall was initiated by observing the landscape of forest area in which waterfall is part of the forest through Google Earth. From the viewpoint of Google Earth images, the visual examination was done to assess the landscape condition, including degree of forest covers, open space and indication of disturbance.

Some information was generated including plant density and dominancy, species endemism, list of exotic plant species and carbon stock. Environmental evaluation was continued with mapping some area of Trisula waterfall. Locations of some area were recorded by GPS Garmin 60CSx. The coordinates then applied in Google Earth and Quantum Geographic Information System (QGIS) version 2.14.4. Work Area of Bromo Tengger Semeru National Park were used to estimate and measured the wide area of Trisula waterfall which managed by RPTN Coban Trisula. Contour map in QGIS was used to determine the elevation for some area of Trisula waterfall. Stream image which showed in map was derived from Geospatial Information Agency (BIG).

From these images, ground check to the location was done. Land use changes were determined by maps and ground check information.

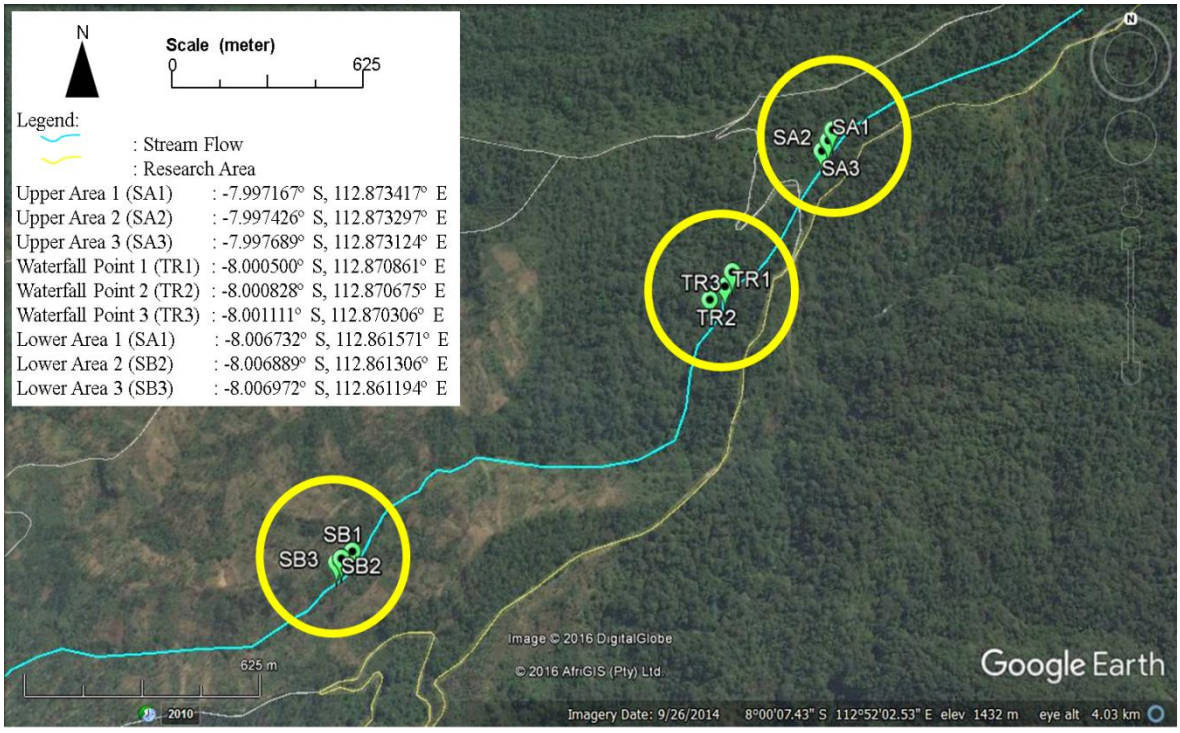

Figure 1. Research Areas of Trisula Waterfall

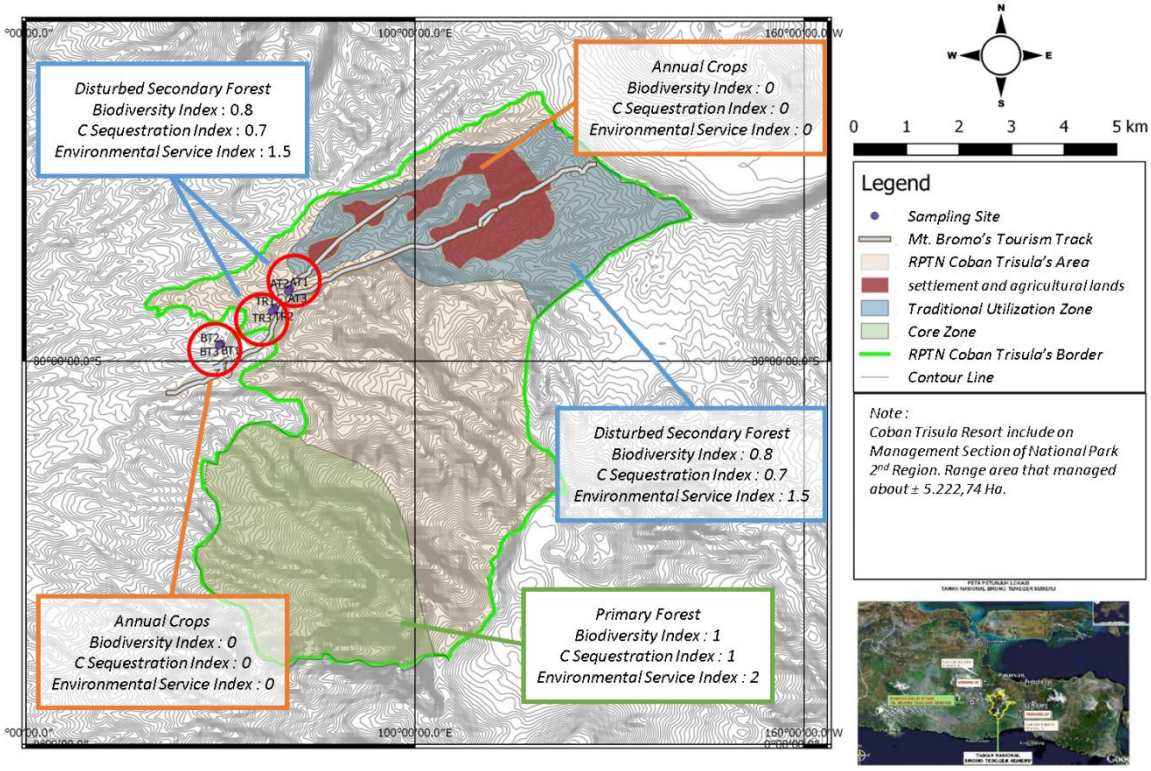

Figure 2. RPTN Trisula Region with Some Land Use Type

Analysis of Environmental Service Index (ESI)

Based on viewpoint focused in images for each plot was matched to land use criteria in Environmental Services Index which provided by Silvopastoral Project Baseline Survey [9]. Environmental Services Index was provided value of each land use. Environmental Services Index was included biodiversity index and carbon sequestration index.

Analysis of Hemeroby Index and Naturalness Index

Environmental Service was calculated using two Indices, namely Hemeroby index and Naturalness index. Hemeroby indices were applied to evaluate impact of anthropogenic factors to habitat quality in each observed stations. Score for Hemeroby indices was 0: Ahemerobe (natural), 1: Oligohemerobe (close to natural conditions), 2: Mesohemerobe (semi natural), 3: β-Hemerobe (far from natural), 4: α-Hemerobe (further from natural), 5: Polyhemerobe (semi artificial), 6: Metahemerobe (artificial) [10].

Naturalness was used to assess the natural level of ecosystems. The application of the indices was based on direct visual observation. In such destination some aspect such as existence of endemic and exotic plant species, man-made buildings, pollutant, input energy, environmental conversion (i.e. mining), level of fragmentation, water dynamic and the general aspect of environmental dynamic was assessed [11]. The evaluation of each aspect was confirmed with the naturalness of environment as follow:

10 = Natural virgin
9 = Natural
8 = Sub Natural (changes not relevant)
7 = Quasi-natural (natural, few relevant changes)
6 = Semi-natural (natural, progressive)

RESULT AND DISCUSSION

Land Uses Profiles

The Coban Trisula Resort was consist of three zone, namely core zone (1,355.73 Ha), wilderness zone (2,576.57 Ha), and traditional uses zone (1,290.44). The forest surrounding Trisula waterfall was lower mountain forest with numerous plant species. It is part of the core zone of national park. This area declared as an important conservation area to protect high level of biodiversity in Bromo Tengger Semeru forest. The wilderness zone was declared as protection area and limited nature-based tourism usage. In this area, the spot of waterfall found. This area

especially rich in term of plant species, mammals and birds [12,13,14].

The traditional use zone consists of rural area, in which it is dominated by orchards of Tenggerese from Ngadas People. In traditional uses zone there are Tenggerese settlement and agricultural lands. This area is known as Ngadas Village. Local people cultivate vegetables in sharp slope lands. In some forest patch in this area, local people collect wood for biomass.

From the Google map images, the area of Trisula waterfall was covered by tropical trees canopy with high intensity. The density of tree in Trisula waterfall was observed higher than in upper and lower area. These images confirm that there are significant forest cover structures. It is may occurs due to anthropogenic aspect. The farming practices in some patch of the forest lead some plant and canopy disappears. This mean, human contributes to the mountain forest ecosystem. Potentially, it is contributes to the decrease of mountain biodiversity, carbon storage and other environmental services [9,15].

Environmental Services Aspect

The evaluation of environmental service confirm that the upper and Trisula waterfall point was classified as secondary forest with score 1.5 (Fig. 2) (Table 1).

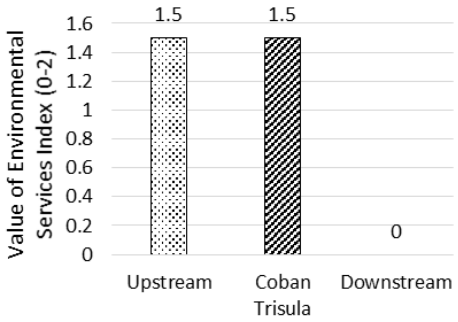

Figure 2. Environmental Service Index

Lower area of Trisula waterfall suffered from fragmentation habitat due to farming activity. It is includes farming potatoes, onion, carrots and other vegetables which has potential market value. Therefore, the value of such land use types was 0.0, in which land uses in annual crops farmlands category (Table 1). The disturbed secondary forest has biodiversity index 0.8. Following the index value ranges, it is classified as high (range scale 0-1)[9].

Carbon sequestration index was 0.7 indicates that carbon stock in Trisula waterfall was better than in downstream area. It is relevant with the recent condition, in which the waterfall area is protected area while the lower area was consisted of farming lands. The conservation programs of area in surrounding waterfall contributes to the existence of numerous plant tree species which area able to store carbon [16,17].

Table 1. Assessment of Land Use based on ESI indices

Location (Land Use)	Biodiversity Index	Carbon Sequestration Index	Environmental Service Index
Upper Area (Disturbed Secondary Forest)	0.8	0.7	1.5
Waterfall Point (Disturbed Secondary Forest)	0.8	0.7	1.5
Lower Area (Annual Crops)	0	0	0

Hemeroby and Naturalness Indices

The monitoring of Trisula water fall and its surrounding area confirm that there is an ecosystem disturbance. Field observation found that the use of water in upper area of waterfall still low. It is shown by few land conversion except the establishment of water tank, post guard and rest area. The area was passed by forest road to Jarak Ijo village. While there is few usages, this area is facing problems with waste from local dweller, especially from Ngadas and Jarak Ijo Villages. Based on Hemeroby index, this area classified as oligohemerobe because there are no human disturbance in this area. However, the management of area was needed to minimize the threats of waste and pollutant which area potentially disturb ecosystem [15].

Downstream of the river was farming land, in which many farmers manage the land to cultivate numerous vegetable. In many case, farmer used pesticides. According to Hemeroby index, it is classified as α-Hemerobe. The application of pesticides and chemical fertilizer potentially contributes to the soil and water pollution. Therefore, promoting organic farming is important with some water management by phytoremediation agent [18].

Based on the Indonesia government law of Ministry of Environment and Forestry No. 82, 2001 has explaining that water use can be classified into four categories (Table 2) [19]. The

evaluation result from this research showed that water in Trisula waterfall categorized as water quality in score 3. Water in downstream area can be classified in score 2 because there are farming activity.

Table 2. The Use of Water based on the Human Activity

Water Usage	Score	Human Activity
None	4	For drinking
Light usage	3	Tourism and daily needs
Fair usage	2	Freshwater fish pond, livestock, agriculture
Moderate usage	1	Industrial, mining

Water in downstream area can be categorized in moderate usage because farming activity contributes to the water pollution. Impact of the farming in this area still has opportunities to increase the environment quality through organic farming and planting phytoremediator plant [18]. The naturalness index evaluation was addressed to inform the natural degree of waterfall. In the upper stream of water fall, indigenous plant such as *Albizia lophanta*, *Geranium* sp., Gonostegia sp., *Elephantopus scaber* and *Equisetum* sp. was identified low. Non native plant species was found in low number but dominant, while exotic plant species not dominant. Some building was found in this area, including water tank, bridge and forest road. There are no pollutants found, both biodegradable and non-degradable. The management of water consumption in this area was simple, water just collected in water tank and distributed to the settlement area. There are no fragmentation habitat was found, and therefore quantitatively the habitat degradation was low. The condition of Trisula waterfall can be classified in quasi natural, in which water poor to meet the ideal condition as an impact of deforestation < 50% [20]. In fact, there are no deforestation, and it is possible because it seems to be related to natural process.

Water condition in Trisula waterfall is classified into sub natural. Area surround waterfall is habitat for numerous local plants. Number of exotic plant species was low. Forest road was found but less used. There is pollution identified. There is no input energy and land conversion was found. The use of water for daily life not found. Therefore, this area can be classified as natural area with fewer disturbances [11].

CONCLUSION

The environmental status of Trisula waterfall can be said good. There area some evidence of unsustainable land uses in upper and downstream area of water fall due to agricultural uses of land. These area strictly should be controlled systematically with the objective is achieving sustainable uses of resources. Revegetation will support the provision of environmental services be better. Moreover, anthropogenic activity can be controlled by a persuasive approach to minimize disruption to the ecosystem. In the tourist activity in Coban Trisula ecosystem, the lack of facilities and management of ecosystems is less likely to cause interest in low traffic. Therefore, improvement of facilities and proper management is essential to the provision of cultural services can be met properly.

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Resources of Boti Village (Timor Island) for the Ecotourism Development

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Abstract

The aim of the paper is to describe the natural and cultural resources of Boti community for tourism development in Boti Village in Timor Island, Indonesia. Boti has been known as the last kingdom in Timor Island and has visited by tourist to enjoy community live and green landscape in semi arid region in Timor Island. The Boti community has indigenous belief called *halaika*, and community daily life was organized and managed by a king called *Usif*. The basic philosophy of community who live in Boti was implemented in house structure, arrangement and philosophy (*sonaf, ume kbubu, lopo*), farming activity, and many daily activities. The uniqueness of Boti's nature and culture has potentiality to be developed as tourism attractions. The local wisdoms of local community in Boti influence the sustainable uses of resources, in which it is produces green and beauty forest landscape in Boti area. Eco-tourism seems to be potential form of tourism in Boti villages.

Keywords: Boti Village, ecotourism, indigenous community, local wisdom.

INTRODUCTION

Tourism is an important economic machine for many developing countries. In Indonesia, tourism contributes significantly in national and regional development. In many areas in Indonesia tourism has been developed to support local development. It is especially important in area with abundance natural and cultural resources. According to statistical data, tourism growth in Indonesia in 2014 reach 9.39% compared to the previous years. Tourism contributes to the local economic development in many regions. Tourism was considered as an economic trigger for many sectors in recent development [1].

The benefit of tourism has been reported numerous. In the perspectives of economic aspect, tourism contributes to support national earning, increase local economic benefit, provides jobs, open opportunities for new business, and reduces poverty [2]. There are important aspect related to tourism-economic issues, namely tourism demand, tourism supply, market and governance to facilitate supply-demand and tourism stake-holders which are contributes to the tourism industry [3]. Tourist decision to visit some area has been identified related to some aspects, including attractions availability. There are also tourism products which are important to determine tourist to visit some destination [4].

In the perspective of economic, there are some benefits of tourism. It is including : tourism as agent to provides jobs opportunities, tourism opens opportunities to increase tax, tourism increase national revenue, tourism accelerate income equity, tourism increase adding value of cultural product, tourism enlarge market of domestic product; and tourism increase multiplier effect in economic sectors as an impact of tourism spending [5]. In social aspect, tourism contributes to increase education and training to increase human capacity. Scholar point out that tourism is a media to changes information, able to increase cultural and heritage preservation, increase local community capacity, decrease social conflict, and increase community creativity and innovation. In environmental aspect, tourism has been reported contributes to the environmental protection [6].

East Nusa Tenggara is an area with abundance natural and cultural resources but there still little utilization in tourism sectors [7,8]. In 2011, through the Master Plant for Acceleration and Development of National Economic year 2011-2025 which are established by central government, NTT with Bali and NTB was classified as zone 5 of economic corridors of development in Indonesia [9]. This provides opportunities for the development of Bali and lesser Sundas Island (West and East Nusa Tenggara Province) in development.

As far, Timor East Nusa Tenggara has 458 tourism attractions which are distributes to 22

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regencies and cities. The preferred tourism object was nature-based tourism destination, in which there are 115 objects (25%) of the total of tourism object in East Nusa Tenggara. Potential tourism attractions are ranging from savanna, protected forest, cave, beach and hills. The highest number of tourism attraction is coastal area, in which there are about 104 of costal point. It is not surprises because East Nusa Tenggara has many islands and the length of coastline was about 5,700 km. East Nusa Tenggara has 334 unit of tourism accommodation, ranging from star hotels, non star hotel, hostels. There are about 16 airports to support tourist arrivals to East Nusa Tenggara islands.

In the past five years, there are tendency of tourist arrivals increase in East Nusa Tenggara. Tourist was dominated by domestic tourist. It is become opportunities for East Nusa Tenggara to develop tourism. The aim of the paper is to describe the natural and cultural resources of Boti community for tourism development in Boti Village in Timor Island, Indonesia.

MATERIAL AND METHOD

In order to identify the social and environmental aspect of Boti, a primary and secondary data was collected. Primary data especially conducted at Boti Village through field observation and in depth interviews. An in depth interview with informal leader and member of community was implemented following standard methods. Author was accompanied with the family member of *Usif* (Boti king) to make appointment and facilitate in depth interviews implementation with *Usif*. *Usif* is the key person in this study to explore more story and information about the Boti community. An observation of rural environment was done through rapid rural resources appraisal.

Secondary data was collected through literature and document survey. Literature was collected from numerous office and library, both in local district and provincial office. The information generated from *Usif* and field evidence from observation activity was elaborated with literature sources. All of the generated and collected data was analyzed descriptively.

RESULT AND DISCUSSION

Boti Tribal community

Indigenous community in Timor-Tengah Selatan (TTS) Regency is Dawan, in which they live in core family system called *Ume*. They grow and form a small clan called *pulunes* or *kuanes.* Some of them, however, grow as a big clan called *kanaf*. The *Ume* lives in traditional house called *lopo* and *ume* (Fig. 1). *Lopo* is house for male and *ume* is house for female. The majority of community in TTS can be classified into three categories: (1) *adat* community (the traditional community with its own regulation), (2) agro-based community, and (3) transition community [10]. As many tribal communities in tropical regions, communication and transfer knowledge among member were flow by mouth communication and flow from generation to generation.

Figure 1. The Traditional House of Boti
a) *Lopo* (house for men), and b) *Ume kbubu* (House for women)

Boti tribal community lives in small area in Timor Tengah Selatan Regency (TTS). Administratively, Boti live in Ki'e Sub-district in TTS regency. Boti is the indigenous tribal community of western Timor Island, the descendant of Dawan or Sonbai. They called their group as *atoin meto* (men who live in semi arid to arid region). This community uses Dawan language for daily communication, in which recent population number was calculated about 77 households or 316 people. The Boti man never cut their hair and practicing many aspect

of life following traditional role and using traditional equipments and tools.

The living system is unique. For a long time, this tribal community has been visited by tourist, especially foreign tourist. Based on the visitor guest records which area stored in *Usif* house, reason to visit Boti villages was numerous, include experiencing local tradition, landscape and get spiritual permission from king of Boti (the *Usif* Boti). Many visitors believe that kings have spiritual and supernatural power which is important for many objectives and purposes of the visitors to Boti. The main livelihood of villages in Boti is semi arid agricultural.

Lands and Vegetation

Boti located at the karsts area in secondary lowland forest area. The highest location of Boti villages located at 400 m asl. While there are no precise climate and rainfall data, it seems that the rainfall in Boti was sufficiently support semi-arid agricultural system. Some area a fertile lands and many indigenous plant to Timor Island was found in Boti forest area. The majority of lands were used as crop cultivation and plantation. Soil was fragile and landslide easily occurs. In rainy season, accessibility to Boti was difficult because few roads were asphalted. The accessibility to the community can be said not easy ways. While there are limitation, live in Boti was harmonious with nature. The community of Boti is able to maintain environmental diversity. The harmony of Boti life is a representative the balance between human community, human and nature, and human and creator [11].

Forest of Boti community is integral part of forest [11] in Timor Island. Forest of Timor Island seems to be unique because some plant has origins from Australasia region, while other origins from Sundaland (Asia continental). *Eucalyptus alba* or *hu'e* found abundance in Timor, especially in Boti forest area. This species shows close relationship with the species in Australia [7]. Other species such as *Pteracarpus Indicus* or locally called *matani* shows close relationship with some species in India and Asia continent. Recently, such forest was limited in Indonesia, and therefore the existence of such forest was important. The management of forest through traditional knowledge is particularly important. In Indonesia, it is often common that local community manage natural resources, including community forest and home garden using traditional knowledge approach [12].

Figure 2. Forest of Boti

Halaika is an animism belief in Boti community; in which community belief the existence of *Uis Neno* and *Uis Pah*, despite the existence of community ancestor. According to Boti community, maintaining good relationship and communication with ancestor is an essential prerequisite to live in harmony, and perhaps even personal spirituality - among Boti community. Fundamentally, the belief of Boti respect to the natural balance, in which community prosperity can be only achieved if human respect to nature and able to maintain environment. The friendship of human-nature was important. Nature was viw3d as a system in which all of the resources are produced to enhance human prosperity and generation sustainability.

In many areas with traditional knowledge and local wisdom, biodiversity are relatively conserved by local people [12]. Local belief often provides spiritual power and increase the awareness of local people to participate in conservation [13]. In the perspective of tourism, this is become the significant tools to increase resources conservation to provides good attraction and enhance the tourist satisfaction. The local knowledge to conserve many indige-nous plants for food and cultural needs has potentiality to integrate in rural tourism program [14].

Tourism Resources in Boti

Tourism resources both cultural and natural are important in tourism development. In many areas in Indonesia, however, the potentiality of tourism resources for tourism development rarely discussed intensively to provide comprehensive basic data related to tourism resources. Boti has numerous tourism resources, ranging from natural to cultural resources. Some of them are listed follow.

Indigenous landscapes

The panorama of Boti villages and its surrounding area was hilly with many indigenous plants. The territory of Boti especially shows green area in semi arid and dry environment of Timor Island. Landscape scenery and relatively cool climates in semi arid regions are the main reason for tourist to visit Boti. This feature becomes important aspect that attract tourist to come to Boti. Psychologically, there are widely report on the impact of environmental quality and tourist desire to visit particular area with high quality of landscape [15].

Handicraft

The handicraft product of local community in Boti has specific characters and motif, in which it has uniqueness value (Fig. 3). Handicrat is the representative of ethnobotanical knowledge of local people on the uses of bio-resources for numerous daily equipment and art product which are interesting among tourist. There are bag, accessory, statues, and *tais*.

Figure 3. Boti Feminine Crafts
a) Traditional woven fabric for chair cover, and
b) Woman weaving traditionally

King Boti Palace

It is locally called *sonaf*, is the magnet of tourist who visits Boti. *Sonaf* was established behind *lopo* and used to accept guest or community meeting. The entire problem related to *adat* was also solved in *sonaf* and *lopo*.

Boti's Traditional House

It is locally called *ume kbubu* and was house of female, especially to conduct many daily works of women. *Lopo* was used by men to support their activity. These building were established with rich philosophy value. Philosophically, it is vertical and horizontal architecture. All of the material was collected from internal area of Boti Village. These influence the forest resources in Boti area which was conserved. Besides provides materials for building, forest of Boti community also provides food and medical plant material.

Some Plants in Boti Forest

The plants in Boti Forest have potentiality as tourism object. As far, 77 plant species was found to be used by people in Boti [16]. This is become the crucial natural resources for Boti community. Plant has numerous function, ranging from food, medical, material for constriction, and forage. There are need to be more exploration on the ethnobotanical aspect of plant-human in Boti.

Live Philosophy

Pattern and behavior which area influenced by local belief called *Halika*. Boti is rich in term of intangible heritage, including culture. It is become the potential sources for tourism development.

As far, tourism accommodation is absent in Boti villages. There are however, available house which area able to use by tourist.

Remoteness and Area Accessibility

Boti community lives in remotes area in Timor Island. The road to Boti was poor and few of them asphalted. Many roads are still constructed in open soil and gravel. Boti especially is accessible in dry periods and very difficult to access in rainy season. Boti is accessible by motor bike and car. Roads are important aspect for human and tourism movement. In the perspective of destination planning, road is the corridors which are provide numerous functions to the development of destination. There are no modern buildings in Boti villages. Machine and electronic instrument (i.e. radio, television, and internet) was absent. In the perspective of government and moderns economic, Boti can be

classified as less developed area in Timor Islands. However, in the perspective of human psychology, Boti is sustainable community, in which resources suport for human daily life continue without disturbance. There is prosperity among Boti community.

Education and health facility was absent. Medical aspect in the community was performed through traditional knowledge, especially the usage of numerous plans as medical material. The role of traditional knowledge was dominant in Boti community. It is especially common among local community throughout the world. The benefit of such knowledge recently has been identified to enhance the sustainability used of natural resources and therefore contribute to the sustainable development. Indigenous knowledge of Boti community to conservation has been more impressive.

Ecotourism development

Boti tribal community in Timor Island has potential resources for tourism development. Ecotourism seems to be the important form of tourism in Boti. Ecotourism is the responsible travel to natural environment, while it is also provides attention to the local community development [17]. In the perspective of ecotourism development, Boti provides ideal ecotourism destination. There are, however, tourism code of conduct was needed. It is especially important in ecotourism to enhance the sustainability of tourism.

While there are many limitation to access Boti community, tourist travel to Boti grows significantly. The remoteness, natural and cultural aspect of Boti seems to be attractive to tourist. The Boti community has been visited by international tourist for over 20 years, but there are no significant impacts of tourism to the indigenous community. These imply that tourism development should be designed to enhance community prosperity.

For the future development of tourism in Boti, the comprehensive study and analysis was needed. It is especially important to driven tourism development in sustainable manner. Scholar point out that tourist activity can be invasive and disturb the cultural aspect of local people. A lot of number and uncontrolled tourist also contribute to the environmental disturbance. In Boti, strengthening code of conduct in tourism is especially important and should be promoted and implemented.

Tourism is driven by attraction [18], and Boti has advantages due to the community has natural and cultural richness which area important for attraction. There are, however, should be understood that attraction and tourism programs should be able to support and enhance the local culture, tradition and support environmental conservation. In such a case, the cooperation and local community participation in tourism development is prerequisite for the sustainable tourism in Boti. Local community participation in tourism development can be very positive in term of promoting development in remotes area, including Boti. Furthermore, it is not sufficient for local government to solve many tourism infrastructure limitations in Boti, since there are still many region in Timor still less developed. In such case, community involvement in develop-ment was important. Ecotourism seem to be significant form of tourism in Boti.

CONCLUSION

The Boti community in Timor Island has much uniqueness, natural and cultural resources which are important for tourism development. The complex interaction of social, cultural and natural aspect and impact to the live in harmony in Boti are considered important to attract tourist. The recent vegetation Boti was preserved successfully through indigenous knowledge and local wisdom in Boti community. It supports the biodiversity conservation of semi arid region in Timor Island. The Boti community and its settlement are relatively difficult to reach.

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Nepenthes as Tourism Flagship Species: the Conservation Strategies in Dayak Seberuang Settlements Area

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Abstract

The aims of this research are to formulate the conservation strategies of lowland *Nepenthes* based on conservation status analysis, distribution map, and conceptualizing *Nepenthes* as flagship species for tourism. Research was held on January to October 2015 in Dayak Seberuang settlement areas, West Kalimantan Province, Indonesia. Literature analysis was used to identify recent conservation status of *Nepenthes*. Spatial analysis with open access software QGIS ver. 2.4 was used to understand the distribution of *Nepenthes*. Descriptive analysis and SWOT analysis was used to analyze people perception about *Nepenthes*. The results showed that from five lowland *Nepenthes* species which commonly found in West Kalimantan Province, one of them, namely *Nepenthes bicalcarata* is categorized as vulnerable (VU), and rest of it was categorized as least concern (LC) based on International Union for Conservation of Natural Resources (IUCN). The status of each lowland *Nepenthes* in West Kalimantan Province is urgent to improve because of much pressure to its population and habitat. Based on the distribution mapping, each *Nepenthes* has different preference of habitat. *Nepenthes bicalcarata* can be found only on canopy cover at peat swam forest, on the other hand, *N. gracilis* and *N. mirabilis* can be found in open area like Kerangas or secondary forest. Results of SWOT analysis showed that IFAS and EFAS score in range 4.107-4.086 which means that the conservation strategies of lowland *Nepenthes* in Dayak Seberuang settlements area are in growth phase to improve the *Nepenthes* population. There are opportunities for the use of Nepenthes as tourism flagship in West Kalimantan.

Keywords: community, conservation strategies, *Nepenthes*.

INTRODUCTION

Indonesia is one of country with high biodiversity resources in the world. Indonesian Institute of Sciences (LIPI-Lembaga Ilmu Pengetahuan Indonesia) reported that Indonesia has 1,500 species of algae, 80,000 species of fungi, 595 species of lichens, 2,197 species of fern, and 30,000-40,000 species of spermatophyte. Indonesian flora is 15.5% from all flora of the world [1]. One of Indonesian endemic flora is *Nepenthes* and Indonesia is biodiversity center of *Nepenthes* in the world [2].

Nepenthes is a carnivorous plant which used its leaf modification known as pitcher to catch the prey. The pitcher is an adaptation to environmental stress especially the habitat with lack of nitrogen [2]. In Indonesia, *Nepenthes* plants are well known as useful plants and recently popular as ornamental plants because of uniqueness of its pitcher [3].

Nepenthes popular as ornamental plants, thus invite the plant hunters to gather it in nature massively. It is one of threats to *Nepenthes* population in Borneo Island (Kalimantan, Sarawak, Sabah, Brunei Darussalam), besides habitat loss because of forest conversion to oil plantation [4].

The threats to Nepenthes population in nature are increasing every year [5]. It became more complex and involves so many aspects, such as economics, cultures, social, politics, environmental health, ecology, etc. To respond that threats, the conservationist need to arrange a comprehensive strategy in *Nepenthes* conservation from some perspective to prevent the decrease of *Nepenthes* population. This research was aim to formulate conservation strategies of lowland *Nepenthes* based on conservation status analysis, distribution map, and people perception about *Nepenthes*.

RESEARCH METHOD

Study site

This study was held in Dayak Seberuang Community settlements area which is one of traditional community in West Kalimantan Province, Indonesia [6]. This community administratively located in Sepauk Sub-district, Sintang Regency, West Kalimantan Province [3]. It is a low land area with average altitude from 0-100 m asl. The common vegetation in this area is

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tropical lowland plants such as *Shorea albida*, *Pandanus tectorius*, *Alstonia schoolaris*, *Sindora* sp., *Gluta renghas*, *Soneratia alba*, and *Planchonia grandis.*

Data collection

The secondary data is conservation status from five lowland *Nepenthes* which is commonly found in 0-500 m asl in West Kalimantan namely *N. ampullaria*, *N. bicalcarata*, *N. gracilis*, *N. mirabilis*, and *N. rafflesiana* [3,7]. It was analyzed according to IUCN red list data (www.iucnredlist.org) which accessed on June 30, 2016. Spatial data from *Nepenthes* distribution was recorded with global positioning system (GPS) in each location of *Nepenthes*. People perception about *Nepenthes* was gathered through discussion and interview with chieftain, prominent figure of Dayak Seberuang People, traditional healers, and stakeholders from villages and Sub-district of Sepauk was involved as informants [8,9].

Data analysis

Every status of lowland *Nepenthes* which commonly found in West Kalimantan Province was analyzed based on the threats aspect [10]. It then completed with data from other literature, field observation, and traditional people assessments.

Spatial data was analyzed with an open access software QGIS ver. 2.4 to construct a distribution map of *Nepenthes* [11,12]. Descriptive analysis was used to arrange people perception about *Nepenthes* [13]. SWOT analysis with IFAS and EFAS matrix was used to quantified and analyzed conservation strategy of lowland *Nepenthes* [14,15].

RESULT AND DISCUSSION

***Nepenthes* Lowland Conservation Status**

Based on IUCN, the conservation status of five lowland *Nepenthes* which commonly found in West Kalimantan Province are least concern (LC) to Vulnerable (VU) (Table 1). *Nephentes ampullaria* [16], *N. gracilis* [17], *N. mirabilis* [18], *N. rafflesiana* [19] were categorized as low risk/least concern. Based on IUCN in 2016, conservation status of *N. ampullaria*, *N. gracilis*, and *N. rafflesiana* is need updating because the last assessment is on 16 years ago when the threats is less complex then now.

On the other hand, the population of *N. mirabilis* is increasing caused by the habit of this species which commonly lives on disturbed habitat which increase in West Kalimantan Province by conversion of forest to agriculture fields [17]. *Nepenthes bicalcarata* is categorized as vulnerable [2,20,21]. Some of this status is not appropriate anymore to reliable condition in nature. For example, the population of *N. rafflesiana* is highly dependent to primary heath forest (*Kerangas* forest), whereas the scope of this habitat is decrease very fast every years caused by expansion of palm oil plantation. The worst condition is happened to *N. bicalcarata*, this species is an endemic species in northern-east part of Kalimantan Island.

This area only populated on peat swam forest and primary *Kerangas* forest which is decrease by forest burned from expansion of palm oil plantation and new paddy fields. Both of this *Nepenthes* status is need to increase into next level to maintain their natural population. Status raised is one of the solutions to maintain the population and makes local government aware about population threats in their region [22,23].

Dayak Seberuang settlements area cover more than three villages which connected by the river. The habitat of lowland *Nepenthes* in this area is actually specific and affected by the micro climate [24]. This fact makes the conservation strategies from each habitat have to be different. *Nepenthes* conservation strategy, especially in Dayak Seberuang settlements area are depend on habitat where the *Nepenthes* lives, not based only on the species itself. *Nepenthes* threats is classified in category number five namely biological resource use [10,24] (Table 2).

Based on field observation and discussion to prominent figures of Dayak Seberuang community, threats to *Nepenthes* is also related to agricultural activities (Number 2) such as slash and burn technique for paddy fields (Table 2). Special condition of *Nepenthes* in Dayak Seberuang People is *Nepenthes* directly affected by tradition especially because it has many traditional use like traditional medicine, dye material, etc. [4]. This condition can make *Nepenthes* population increase or decrease depends on how traditional people, local government, and related stakeholders manage it [25].

Conservation Strategy of Lowland Nepenthes based on Distribution Maps

Lowland Nepenthes which found in Dayak Seberuang settlements area is live in specific habitat. Specific habitat is some preference for each *Nepenthes* (Fig. 1).

Table 1. Threats Status of Lowland *Nepenthes* based on IUCN

***Nepenthes* species**	**Threats status by IUCN**	**Latest review**	**Annotations**	**Field observation**
N. ampullaria	LR/LC Ver. 2.3	2000	Needs updating	Abundant
N. bicalcarata	VU B1 +2c Ver 2.3	2000	Needs updating	Hardly found
N. gracilis	LR/LC Ver. 2.3	2000	Needs updating	Abundant
N. mirabilis	LCVer 3.1	2014	Update	Increasing
N. rafflesiana	LR/LC Ver. 2.3	2000	Needs updating	Hardly found

Note: LR = Lower risk, LC = least concern, VU= Vulnerable

Table 2. Threats Classification of Lowland *Nepenthes*

***Nepenthes* Species**	**First level threat category**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
N. ampullaria		X *			X * [5]						
N. biclcarata		X *			X * [2]						
N. gracilis		X *			X * [5]						
N. mirabilis		X *			X * [2]						
N. rafflesiana		X *			X * [5]						

Note: *Based on field observation and interview from Dayak Seberuang People, West Kalimantan

1. Residential & commercial development, 2. Agriculture and aquaculture, 3. Energy production and mining, 4. Transportation and services corridors, 5. Biological resources use, 6. Human intrusions and disturbance, 7. Natural systems modifications, 8. Invasive and other problematic species and genes, 9. Pollution, 10. Geological events, and 11. Climate change and severe weather.

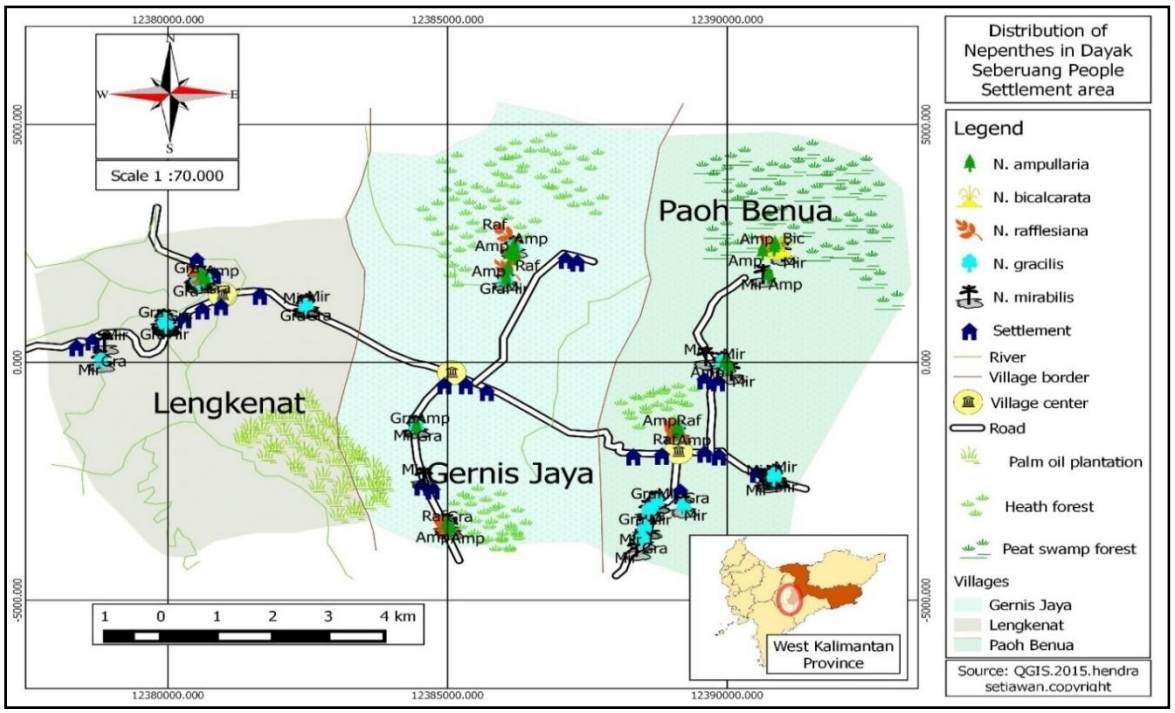

Figure 1. Map of *Nepenthes* Distribution in Dayak Seberuang People Settlements Area

Nepenthes ampullaria can be found in secondary forest with open canopy, heath forest (Kerangas forest), peat swam forest, and edge of lake. *Nepenthes bicalcarata* only can be found in peat swamp forest. *Nepenthes gracilis* and *N. mirabilis* commonly found in an open canopy area like secondary forest and disturbed habitat. *Nepenthes rafflesiana* commonly found in primary Kerangas forest and peat swamp forest. In some condition, *Nepenthes* can be found lives side by side with other *Nepenthes. Nepenthes bicalcarata* can be found with *N. ampullaria* and *N. rafflesiana* but never found with *N. gracilis* and *N. mirabilis*. *Nepenthes ampullaria* can lives with all lowland *Nepenthes* in this area (Fig. 1). This habitat preference can make some point to arrange the conservation strategy for lowland Nepenthes especially in Dayak Seberuang settlement area. P

Preference of *Nepenthes* distribution in their habitat affected by physical-chemical factors such as soil organic matter (SOM), pH, and light intensity [2,21,26]. Soil organic matter is spread out vary in each habitat which caused by a long

time process of soil weathering. It affects other soil physical-chemical factors like soil acidic level (pH), canopy coverage, light intensity, temperature, humidity, etc. The distribution of SOM and other factors effected the distribution of *Nepenthes* in natural habitat [26]. *Nepenthes bicalcarata* and *N. rafflesiana* disposed to lives in habitat with high contain soil organic matter and low light intensity like peat swamp forest and primary heath forest (Fig. 1). *Nepenthes gracilis* and *N. mirbilis* commonly found in open area with low SOM and high light intensity (Fig. 1). *Nepenthes ampullaria* can be found in almost all *Nepenthes* habitat in lowland area [2,21].

Nepenthes distribution's map can be use as source/references for arrangement of *Nepenthes* conservation strategy. Preference of *Nepenthes* distribution specific to some habitat is the main point in *Nepenthes* conservation strategy. Specific habitat is the main target to conserve *Nepenthes*. For example, *N. bicalcarata* in Dayak Seberuang settlement area only found in peat swamp forest, its mean that the peat swamp forest is a primary target to conserve and maintain the population of *N. bicalcarata* (Fig.1). Distribution map is a common tools in arrange the conservation strategy and policy to be more effective and accurate on target [27].

Conservation Strategy of Lowland *Nepenthes*

Internal factors of SWOT analysis consist of strengths and weakness. The highest score of strengths factor is that traditional people still respect the culture in the highest level and it score is 0.893 (Table 3). This factor supported by traditional events which held every year to celebrate the expression of gratitude to the Creator and Owner of universe known in Dayak Seberuang believe as *Betara Puyang Gana* for the harvest in that years (Fig. 2). Cultures and traditional values are important factors to conserve the biodiversity [28,29]. Otherwise, cultures degradation in young generation of Dayak Seberuang People is the highest score of weakness factor with score 0.893 (Table 3). This condition is affected by weak of awareness from young generation about traditional values. It also caused by high impact of modernization with lack guidance from elders [30,31]. Over all, total score of internal factors is 4.107 which in strong level (Table 3).

External factor which has the highest impact to *Nepenthes* conservation is the opportunities of support from local government to conserved endemic *Nepenthes* with score 0.776 (Table 4). Local government, in this case is Sintang Regency is made *Nepenthes* as one of their new mascot. The *Nepenthes* mascot can be found in entrance gate of Sintang Regency from Pontianak. The reason of Sintang Regency made *Nepenthes*as a mascot is that there were found at least 11 species with one species, namely *N. clipeata* is one of the most rare and endangered *Nepenthes* in the world [2,7,21]. The highest score of threats factors is the expansion of palm oil plantation around custom forest with score is 0.862 (Table 4). Palm oil expansion is happening massively in all over Kalimantan Island, especially in West Kalimantan. Kalimantan Island lost 30.7% of their forest in 1973-2010 and it will continue while palm oil expansion still allowed [4]. Kalimantan Island is the center of *Nepenthes* distribution in the world, loss of habitat and forest in Kalimantan is mean loss of *Nepenthes* population too [2]. The total score of external factors is 4.086 (Table 4) which means that external factors support *Nepenthes* conservation in strong level.

The combination of internal and external factors showed that lowland *Nepenthes* conservation strategy in Dayak Seberuang People settlements area is in growth phase with ratio 4.107 : 4.086 (Fig. 3). It means that the conservation strategy will be succeed if the collaboration from Dayak Seberuang people, local government, researchers from local collages, and NGO's can complements each other. This collaboration will have important roles in *Nepenthes* conservation. If conservation only done by some people/organization, the results of it will be not optimal [14,32,33].

Some recommendation for conservation Strategy of lowland *Nepenthes* in Dayak Seberuang Settlements area as follow:

1. *Nepenthes* which categorized as high threats based on IUCN and Salafsky conservation threats [10] should be priorities to conserve
2. The location of vulnerable *Nepenthes* should be protected by local wisdom (custom forest) and also by government laws
3. Based on IFAS and EFAS of *Nepenthes* in Dayak Seberuang People, *Nepenthes* is a potential plant to conserve especially because of high respect from local people and also the support from local government to protect and conserve the *Nepenthes* as a new local icon.

Table 3. IFAS matrix (Internal Factors Analysis Summary)

Internal Factors	Weights	Rating	Score
Strengths			
Traditional people respect the culture in the highest level	0.179	5	0.893
High support from chieftain and prominent figure of Dayak Seberuang People	0.143	4	0.571
Existence of endemic *Nepenthes*	0.107	5	0.536
Traditional people pretention to make *Nepenthes* as sustainable income	0.071	3	0.214
Traditional people from three village of Dayak Seberuang People wants to protect the remaining forest with indigenous knowledge	0.036	3	0.107
Weakness			
Cultures degradation of indigenous knowledge in young generation of Dayak Seberuang People	0.179	5	0.893
Limited of qualified human resources	0.107	4	0.429
People' custom which open the paddy fields with slush and burn technique	0.071	2	0.143
Most of traditional people have no knowledge of endemic species in their land	0.071	3	0.214
Lack of supporting facilities to *Nepenthes* development and cultivation	0.036	3	0.107
Total score	**1**		**4.107**

Table 4. EFAS Matrix (External Factors Analysis Summary)

External Factors	Weight	Rating	Score
Opportunities			
Support from local government to conserved endemic *Nepenthes*	0.155	5	0.776
Program from Ministry of Rural Development to support GDP	0.121	4	0.483
Increasing of people interest in *Nepenthes* cultivation	0.086	4	0.345
Support from local academic/collages in conservation of endemic *Nepenthes*	0.086	3	0.259
Support from conservation NGO's to protect local biodiversity	0.034	3	0.103
Threats			
Threats from palm oil plantation expansion around custom forest	0.172	5	0.862
Forest burn caused by palm oil plantation	0.155	5	0.776
Over exploitation of *Nepenthes* by collector	0.103	3	0.310
Lack of coordination between village or region in biodiversity conservation	0.052	2	0.103
Limited access to large area in over three village of Dayak Seberuang People	0.034	2	0.069
Total score	**1**		**4.086**

Nepenthes As flagship species in tourism

Nepenthes has potential value as tourism flagship species in Kalimantan. The value of *Nepenthes* in flagships is attracting tourist interest in various aspects, including conservation action to support *Nepenthes* through numerous tourism activities. It is includes education to increase tourist awareness in *Nepenthes* conservation, increase tourism involvement in planting Nepenthes in natural habitat, and numerous education program to improve tourist understanding about ecology and biology of *Nepenthes*. It is especially important and relevant with the objective of ecotourism to support conservation.

The idea of the use of flora and fauna as flagship species has been suggested by scholars [34,35]. The charismatic species often attract tourist to visit some particular area, such as komodo in Komodo National park or Orang utan in Tanjung Puting National Park. There is also possibility to use *Nepenthes* to attract tourist. In such a case, the conservation of *Nepenthes* is crucial.

Local community, local government and tourism planer have expressed their concern about *Nepenthes* as tourism flagship species in Dayak Seberuang in West Kalimantan. *Nepenthes* are considered high priority in tourism image development as flagship species. It is based on *Nepenthes* importance in the daily live of local people in Dayak Seberuang.

CONCLUSION

Nepenthes conservation strategy has to be formulated from different perspective to overcoming the *Nepenthes* threat which become more complex every time. *Nepenthes* conservation status analysis can be use to determine the priority of conservation action, *Nepenthes* which have critical status should be priority for conservation. *Nepenthes* distribution data analysis used open access software QGIS 2.4 produced the range area of *Nepenthes*

distribution center and other ecological factor which affect *Nepenthes* population.

People perception analysis about *Nepenthes* and it threats can be use to formulate *Nepenthes* conservation strategy based on indigenous knowledge perspective. People perception with IFAS and EFAS score in range 4.107 : 4.086 means that the conservation strategies of lowland *Nepenthes* in Dayak Seberuang settlements area are in growth phase to improve the *Nepenthes* population. Conservation strategies of common lowland *Nepenthes* in West Kalimantan should be based on people perception and indigenous knowledge which combined with natural condition like *Nepenthes* distribution and it preference. *Nepenthes* has significant value as tourism destination icon, especially for tourism flagship species.

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Poverty and Tourism: Strategies and Opportunities in Karimunjawa Island, Central Java

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Abstract

This article analyzes the strategies of Pro-Poor Tourism (PPT), i.e. the strategies to increase the benefits for poor people from tourism development. It explained the view that tourism, on a small or large scale, has a positive contribution to increased sources of income, creation of employment opportunities, and community development. However, there are still problems in developing the potentialities of the local labor force to contribute in the tourism sector. The development of tourism in Karimunjawa over the past ten years has undergone good progress, but the poverty rate in Karimunjawa is still fairly high. The problem of poverty is a complex one and is linked to a decrease in the main sources of earnings, i.e. fisheries and agriculture. The underlying concern is the fact that the growth of tourism in Karimunjawa has fostered the growth of resorts, hotels or the service sector owned and run by big investors, vis-à-vis the scant participation of the poor. The dominant types of job that the local community does are as employees or hired workers, and they are rarely involved directly in the planning and development of tourism, thereby restricting the potential role of the poor in the tourism sector in Karimunjawa. This study recommends strategies for the empowerment of the local community to enable them to make a considerable contribution to tourism in Karimunjawa in an endeavor to alleviate poverty and enhance the quality of human resources. One strategy recommended in this article is the adoption of a pro-poor policy through vocational training in tourism for the local community of Karimunjawa.

Keywords: Karimunjawa, poverty, Pro-Poor Tourism, tourism, vocational training.

INTRODUCTION

As the world's largest archipelagic nation, Indonesia has thousands of small islands with a number of endemic features of extremely typical and valuable diversity. Physically, the small islands comprise small-sized land area which has implications for the life of the people in these regions. Rijanta [1] explains that these small islands, besides having abundant potential marine resources, are extremely vulnerable to the volatile condition in the ecosystem, the environment, as well as the socio-cultural and political turbulence. They are subject to physical and social isolation [1] and the slow-moving demographic dynamic and accelerating migration. The condition of the regions which consist of small islands with limitations in transportation makes it difficult for the inhabitants to gain access to decent living, which enables them to survive.

One of the major problems faced by the local people on the islets is poverty, which is a crucial issue for Indonesia as a maritime nation. The majority of the population that inhabit the islets earn their livelihood in the sea (as fishermen) and in agriculture (as farmer). Fishing and farming are two sectors in which the poor stand at a high employment figure [2,3,4]. The typical characteristics of the islets cause the farmers encounter obstacles in their process of production. Limitations in the availability of land, the supply of water, access to the market as well as the threat of climate change make it hard for the farming communities to develop. Fishing is a significant and important choice of occupation to increase earnings and maintain food security of the poor households with inadequate farmland [5]. On the other hand, the fishermen are under the increasing threat of climate change and the environment such as increased sea level, acidification of the sea, and the rise of the seawater [6,7]. The fishermen are also affected by economic policies, privatization of public facilities, deregulation of various economic activities and the market, as well as progressive liberalization of foreign trade [8,9].

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The small islands with their fragile ecological condition, traditional socioeconomic structure, limited resources and undeveloped infra-structure [9,10] require alternatives of economic development, one of which is tourism. The tourism industry is a sector which is considered labor intensive and offers significant potential for sustainable growth in developing countries that may have limited growth options [12,13,14]. However, tourism can be useful if it is devised and integrated into the local system [15] especially when the promotion and development of tourism are done in partnership involving the government, NGO (Non Governmental Organization) and the local community. In the past decade, the idea that the growth of tourism can contribute sufficiently to poverty alleviation has greatly encouraged the emergence of a policy in tourism development with a pro-poor tourism approach.

The term Pro-Poor Tourism (PPT) was introduced in 1999 and implemented in Britain for economic development by putting tourism as a sector that could contribute to poverty alleviation. PPT is not aimed at expanding the scale of tourism but is intended to open up opportunities for the poor in tourism at all levels and scales of operation [16,17].

The strategies of PPT development are to improve economic benefits, to open up business opportunities for the poor, and to raise the people's collective incomes, and to improve non-economic benefits, and build up capabilities, set up training and practice; to reduce the environmental impact of tourism on the poor, to cope with the socio-cultural effect of tourism. The PPT approach is very interesting in analysis of livelihood [18,19]. This analysis is important if tourism will be used to contribute to the welfare of the poor. In order to maximize the contribution of households and to avoid the poor households' dependence, tourism can be used to diversify the people's means of livelihood.

In the context of tourism development, local participation is important, not only to fill the demand for manpower but also to provide services that encourage more tourists to visit through the local people's attitude and way of life. Tourism development depends not only on natural resources and the attraction of promotion campaigns but also on the willingness of locals to welcome tourists and give them satisfactory services. The locals' preparedness is a moral support for the tourism sector and it directly reflects their readiness to participate in the tourism industry.

This article provides a contribution to a discussion of the points above by depicting the impact of tourism development on the most popular holiday destination in Central Java, i.e. Karimunjawa Island, which also includes the process of developing the holiday destinations on the island, the contribution of the local community, and poverty alleviation. Our discussion is divided into three parts. The first part begins with a brief description of issues in relation to poverty on the island in the context of the dynamic of tourism on the island at the present time, followed by a depiction of the impact of tourism on the life of the local people. The third part offers an analysis of the findings of this research.

MATERIAL AND METHOD

Study Area

This study is a descriptive qualitative research. This approach is used to reveal the implementation and dynamic of Pro-Poor Tourism in the development of tourism in Karimunjawa. The research was conducted in Karimunjawa Sub-district, which is one of the sub districts in Jepara Regency, Central Java. Karimunjawa is one of the areas that have been designated as a pre-eminent holiday destination in Central Java besides Borobudur Temple, Dieng, and Sangiran. Geographically Karimunjawa Island is located 45 nautical miles or about 83 km north-west of Jepara, at a height of 0-605 m above sea-level, at $5^{o}40'39''$-$5^{o}55'00''$ and $100^{o}31'15''$ East Longitude (Fig. 1), with an area of 169,800 ha consisting of a land area of 7,120 ha and a marine area of 162,680 ha [20].

Data Collection

The primary data were gathered through in-depth interviews to several key persons who selected by purposive and snowball sampling method. The key persons represent the most capable person in their sub-district who could give some important data and information as individual, household and community member. Respondents comprise six informants selected from the pre-welfare community, tour operators, and travel agencies, community elders/public figures, village authorities, and the subdistrict head. Primary data also obtained through observation and documentation.

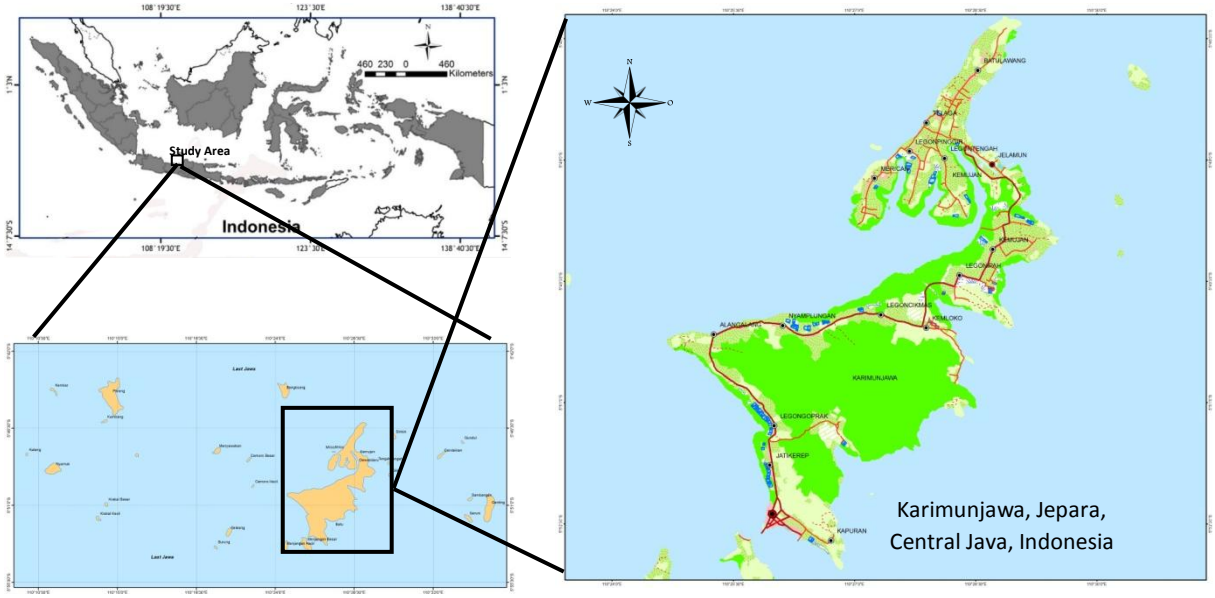

Figure 1. Study Area and Location of Karimunjawa

Secondary data were from official documents and literature relating to the research questions. The secondary data are social economic level, demographics, and tourist visits. Data collected by library research to gather data from a number of references related to spatial planning, demography, tourism, etc.

Data Analysis Method

As a qualitative research, this research adopted a logistic approach to analyze findings and data, and draw a conclusion at the end. Data collection and the process of analysis were done simultaneously. Data analysis used in this research consisted of three activities, namely 1) Data Reduction by summarizing, selecting, and focusing on important matters, finding the theme and pattern. In this case, the implementation of the pro-poor tourism approach was investigated. 2) Data Display: the compilation phase and the presentation of information to be used in the depiction of the study results. 3) Drawing Conclusion in which a preliminary tentative conclusion was drawn; this would be modified if strong evidence was lacked. It was done to support the next phase of data collection. Valid evidence would support the suggestion and consistent conclusion, which would be put forward as a credible conclusion.

RESULT AND DISCUSSION

Poverty in Karimunjawa

Karimunjawa Sub-district administratively consists of four villages, i.e. Karimunjawa, Kemujan, Parang, and Nyamuk. All the villages in the subdistrict are typologically coastal area at an altitude of less than 500 m. The center of administration of Karimunjawa Sub-district is located on Karimunjawa Island, which is 40 miles from Kartini seaport in Jepara, and can be reached by boarding Bahari Express Sailing Ship, which takes about two hours or less than four hours by speedboat.

In 2014 Karimunjawa Sub-district had a population of 9,016 consisting of 4,547 men and 4,469 women. It was the most sparsely populated subdistrict in Jepara Regency (0.78%), which comprised 2,621 households so that on average a household had 2-4 members. Karimunjawa Village was the most densely populated, i.e. 4,557 or 50.54% of the total population in the subdistrict, whereas Nyamuk Village was the most sparsely populated, i.e. 551 or 6.11%.

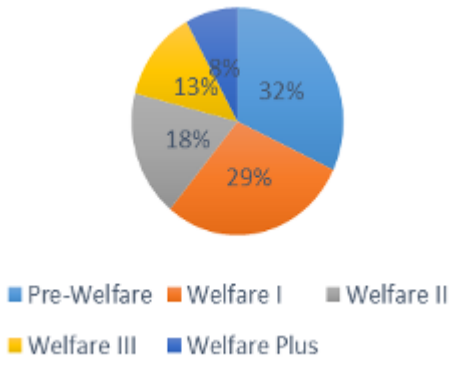

Figure 2. Welfare Levels of the Karimunjawa Inhabitants

According to a report by the *BPS* (Central Statistics Bureau) in 2016 [21], the welfare level of Karimunjawa Sub-district was low: 32% belonged to the category of pre-welfare households, and 27% to the category of welfare 1 households (Fig. 2).

The pre-welfare householders in Karimunjawa Sub-district are scattered in four villages, in which Parang Village has the greatest number of pre-welfare households, i.e. 39% of the total population of the village, followed by Nyamuk, Karimunjawa, and Kemujan villages (Table 1). From the total percentage of pre-welfare inhabitants in Karimunjawa Sub-district, Karimunjawa Village has the highest percentage of 32% followed by Kemujan Village with 30%.

Table 1. Total of Households According to Welfare Status

Welfare Status	Percentage (%)			
	Karimun	Kemujan	Parang	Nyamuk
Pre-Welfare	32	30	39	34
Welfare I	27	33	31	29
Welfare II	17	21	15	18
Welfare III	14	11	8	10
Welfare Plus	10	5	7	7
Total	**100**	**100**	**100**	**100**

Source: Karimunjawa Sub-district in Figures [22]

The poor and extremely poor households in Karimunjawa subdistrict are 1,803 in number with the total members of 7,212 (assuming four members per household). Based on observation in the field, poverty on this island is caused by the low earnings of the farmers and fishermen; the biggest communities on Karimunjawa Island. This condition is due to their inability to maximize the access to the local potentialities. In many studies of farmers and fishermen as the group most vulnerable to poverty [2,3,4].

It is increasingly difficult for the traditional fisherman in Karimunjawa to obtain a maximum catch of fish, and they fail to compete with other fishermen who have modern equipment. Their catches began to diminish even more when large ships came to operate there. These ships are furnished with cold storage, sophisticated tools for catching fish, a fish finder, a radio for communication, and a magnetic compass. The fish caught by the traditional fishermen are merely sufficient to meet their basic needs, especially food. Furthermore, according to a report on the zonation of the National Park of Karimunjawa in 2012, it is found that the biomass of rockfish and its abundance monitored from 2004 to 2009 was generally diminishing in all zones. During 2007-2009 there was a significant decline of the biomass of rockfish, i.e. 25.55 percent, from 480.25 $kg.ha^{-1}$ in 2005 to 200.30 $kg.ha^{-1}$ in 2009. The fisherman have been aware of this condition, as expressed by our informant MD (52) who said that "if the fishermen's current amount of catch was the same as that ten years ago, the fishermen would be all well-off by now".

The subsistent farmers in Karimunjawa are not capable of introducing innovations to increase productivity and maximize land management of non-irrigated and wet rice fields. Not much technology has been developed in the agricultural and animal husbandry sectors. Limitations in the availability of land and water as well as the dynamic climate change make it hard for the agricultural sector to develop. The production levels of agriculture and animal husbandry in Karimunjawa have continued to be on the decline from year to year. According to informants MN (54) and AM (44), the people's interest in cultivating land and being engaged in breeding farm animals has decreased, and they prefer to buy foodstuffs in the market, where the commodities such as rice, cassava, and bananas are brought in from outside the island. They say that the soil in Karimunjawa is not suitable for agriculture: they tried growing corn and bananas but the yields were poor. They once even tried growing various kinds of prime seed corn and bananas but to no avail.

The high poverty rate in Karimunjawa Sub-district runs parallel with the data on the low levels of education. Most of the people there are Primary School leavers (47.98%), and in fact there are a considerable number of those who did not finish Primary School education, i.e. 32.67% (Table 2). Considering the high percentage of the productive age group, the quality of human resources in the subdistrict is arguably low.

Table 2. Levels of Education

Level of Education	Percentage (%)
None	1.58
Primary School but dropped out	32.67
Primary School	47.98
Junior Secondary School	8.15
Senior Secondary School	8.15
Diploma 1-D3	0.04
Diploma 2	0.44
Diploma 3	0.99
Total	100.00

Source: Karimunjawa Sub-district in figures [22]

Most of the people in Karimunjawa work in the informal sector, i.e. 88.56% with the highest percentage as fishermen (59.53%), and as

farmers (19.32%) whereas others work as farm laborers, construction workers, artisans/ craftsmen, shopkeepers/tradesmen, breeders and mechanics. As a matter of fact, it is very difficult to distinguish between the communities of fishermen and farmers, and classify them into two groups in terms of means of livelihood because in reality, many of them are engaged in both spheres. At certain times they cultivate the fields, but at other times they also go fishing or manage inland fisheries.

Tourism Growth and Its Impact on Karimunjawa

One of the potential spheres for economic development on the island is tourism, which is the largest industry in the world and has been an integral component of the strategy for economic development in various countries. Tourism has the potential for yielding foreign exchange, drawing international investments, increasing tax revenues, and creating new opportunities for employment. Visits by domestics and foreign tourists to Karimunjawa Island have significantly increased since 2007. In 2015 there were 7,579 foreign visitors to the island, and 84,536 domestic visitors, and the number continued to increase in comparison with the numbers in the preceding years [22]. Visits by domestic and foreign tourists increased in frequency as much as 158% and 166% compared with visits in 2007 (Fig. 3). This shows that there is considerable potential for tourism development in Karimunjawa. This potential is balanced by the opening of a ferryboat crossing in Kendal seaport in addition to the one in Jepara seaport.

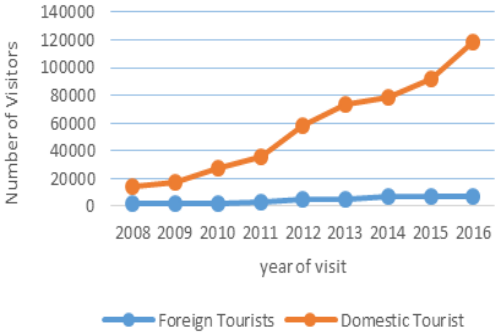

Figure 3. Graphic of visits to Karimunjawa [23]

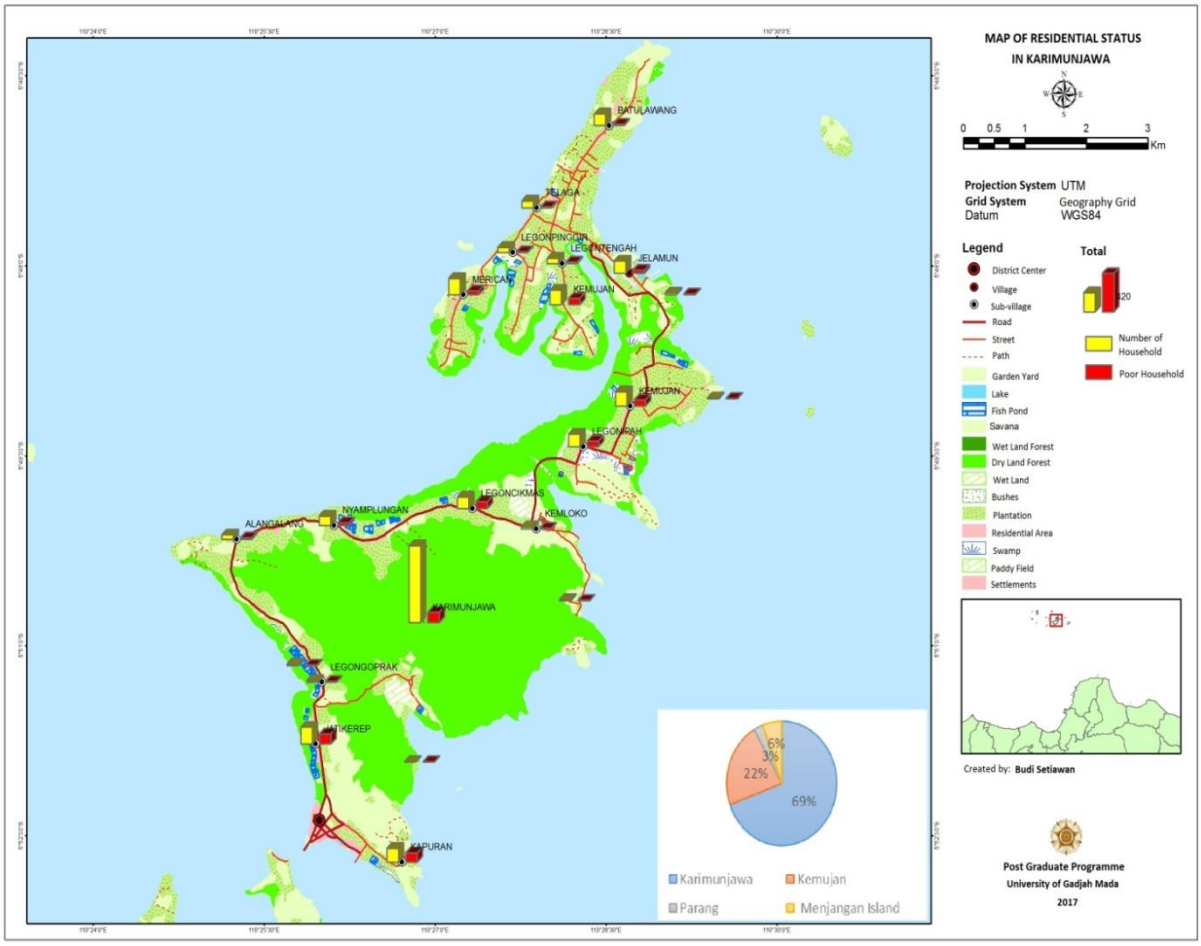

Figure 4. Distribution of Destinations on Karimunjawa

There are about 38 destinations in Karimunjawa which appeal to both domestic and foreign tourists. The frequently visited destinations are the Shark Pond, Snorkelling on Menjangan Island, and a few coasts (such as Barakuda, Batu Topeng, Nirwana, Ujung Gelam, Kemloko, Batu Putih, Batu Lawang) and track events in a mangrove forest. Karimunjawa offers, in addition to nature tourism, religiously oriented tourism, visits to the cemeteries of past pious leaders (e.g. Sunan Nyamplungan), Sayyid Kambang, and Sayyid Abdullah). Annual events also serve as tourist attractions Barikan and Sail Karimunjawa. Karimunjawa village is the most frequently visited destination, i.e. 69% (Fig. 4).

Tourism development in Karimunjawa Village is more noticeable than that in Kemujan Village. This is because, besides being a village with a predominance of tourist destinations, Karimunjawa is a place of entry for tourists on Karimunjawa Pier. This condition has encouraged the construction of facilities and infrastructure for tourists in the village. Within the period 2011-2015 the growth of hotels, resorts, and homestay accommodation was fast: an increase of 40% for hotels and resorts, and 56% for homestay accommodation (Fig. 5).

As illustrations of the condition of hotel affairs in Karimunjawa, the tourists' length of stay was 45.23% in 2014 and 53.53% in 2015. On average, they stayed for 2.64 days: domestic tourists stayed 2.43 days and foreign tourists 4.73 days.

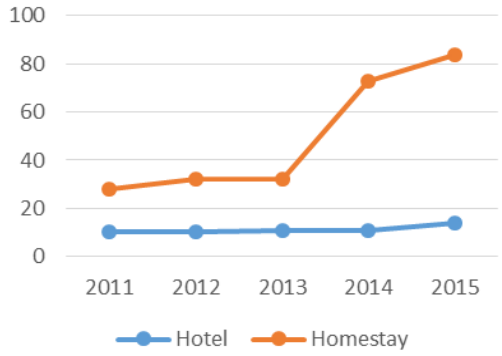

Figure 5. Number of Hotels and Homestay Lodgings in Karimunjawa

The growth of tourism in Karimunjawa gave rise to considerable business potential as it induced big investors to invest their money (Fig. 6). Since then, land prices in Karimunjawa have soared. Everybody knows that unused, uncultivated land in Karimunjawa is a potential gold-mine that should be exploited. There is a tendency among the people who own land to sell it and benefit from this momentum (Fig. 7).

Economic Access to Tourism for the Local Community

Karimunjawa has great potential to become a pre-eminent tourist destination. Tourism develops promisingly with the availability of facilities and infrastructure that supports the potential but of course it requires human resources to manage them. The proliferation of hotels, resorts, homestay accommodation, sales of souvenirs, transportation services, and tour guides has created extensive job opportunities for the communities in and outside Karimunjawa.

Figure 6. Possession of Land by Investors

The condition of tourism development in Karimunjawa has been benefited by the people there, including the fishermen. The opportunities for increased earnings through tourism are widely open. The declining trend of catches of fish causes the fishermen to find alternative jobs. The majority of fishermen who participate in tourism-related activities have expressed their reasons to take options.

The tourism sector has become increasingly attractive to the people of Karimunjawa so that many of them have switched their interest to this

sector as an additional means of livelihood. The kinds of economic activity that they do are making souvenirs, hiring out boats, guiding tourists, and letting out modest homestay accommodation, but these are casual work, not their main occupations depending on the number of visitors or holiday-makers and the climatic conditions in Karimunjawa.

Figure 7. Local Community Offering to Sell Land

According to a Report on the Potentialities of Karimunjawa village [22], the number of labor force aged 15-54 was 3,044 or 59% of the total population of the village. Those who work in the field of tourism are very small in number, i.e. 10.3% of the total productive labor force (Table 3).

Table 3. People Working in Tourism

Occupations	n	%
Homestay accomodation owners	84	41
Hotel & Resort proprietors	15	5
Souvenir vendors	22	6
Craftmen/artisans	15	4
Boatmen	32	8
Guides and tour leaders	146	36
Total	314	100

People who are actively involved in tourism-related economic activity are mostly resident in the north and the middle of the village and along the main road. This is because the infrastructure and facilities for economic activity such as homestay accommodation, souvenir shops, and eating-places are concentrated in the northern part, i.e. the main pier for passenger ships, the village square and further to the central part of the village.

Those who get involved in tourism are mostly the youth (25-45 years old). A fisherman named AM (44) said, “older people are reluctant and hesitant to take part in tourism-related activities; furthermore, the natives of Karimunjawa are naturally diffident, and a job in tourism entails meeting strangers. Younger people are active and like this kind of employment especially that they get paid in cash directly”.

The scant involvement of the people in tourism is due to the limited capabilities of human resources. An organizer of tour guides named AR (49) said, “Tour guides must have adequate qualifications. At least they should be able to use the Indonesian language well, and if they can speak fairly good English, so much the better. Besides, they must have a good communicative ability and are familiar with *sapta pesona* (the code of conduct for guides)”.

The development of tourists’ visits to Karimunjawa does not go together with the development of industries in specialty foods and handicrafts. In the past five years there have been no cottage industries, although efforts to facilitate the sales of souvenirs through kiosks/stalls and in the village square have been made. The products on sale in the funfairs and kiosks in the village square are brought in from outside Karimunjawa, i.e. from Jepara.

Effects of Tourism on the Poor from the PPT Perspective

An important part of the PPT perspective is evaluation of the effects of tourism development on poverty alleviation or elimination, not only in a theoretical framework but in the planning. However, it is not easy to see the effects of tourism development on poverty elimination because the effects cannot be directly evident or noticeable and are a gradual process. One thing worth noting is the causality of tourism and poverty elimination as distinct from the advantages of the PPT approach for tourism.

Table 4. Opportunities and Empowerment of the Poor in Tourism-related Activities

	Small scale (homestay) accommodation run by local community	Large scale (hotels and restaurants run by investors)
Opportunities Earnings	Usually below minimum wage; dependent on frequency of visits; plus point: close to home	Labor force with inadequate and qualification are paid minimum wage or below; sometimes given overtime pay. Employers drawn from outside the island; hence migration
Network/ economic links	Foodstuffs, especially fish: local resources or local markets. Menu: what is locally available; encourage visits to nearby localities that produce handicraft and refreshments, contributions to the mosque; cooperation with boat, bicycle, and motorcycle rentals	Purchase foodstuffs (rice, fish, fruits etc) from big suppliers from outside the island; hotels determine standards of quality and security of supplies; furnishings are brought in from outside Karimunjawa. Local shopkeepers/vendors are allowed to sell commodities around hotels
Opportunities for progress	Individuals are employed without formal qualification	Employees need formal qualifications, some of which are offered for skills development
Empowerment Training for workers	Owners do not provide training, only brief guidelines on employees' duties	On the job training scheme/package available for employees; also for those from surrounding areas
Respect for local tradition and culture	Help to preserve tradition and culture developed through involvement in traditional events	Help to preserve traditional and culture through involvement in the promotion of traditional events

Source: processed from primary data, 2016

A number of things that should be observed from tourism in Karimunjawa from the PPT perspective are: 1). increased household earnings, albeit relatively small; 2). the emergence of diversification of means for livelihood; 3). the discrepancy/gap of the benefits of tourism between the poor and the non-poor communities, though this gap is not wide. The opportunities and empowerment of the scales of activity in tourism development are shown in the Table 4 below.

Table 4 shows a greater role of small-scale enterprises to alleviate poverty. There are more opportunities for labor force and economic network available for local community. However, the local people have little opportunity in large-scale enterprises because they lack formal education and special skills.

Dealing with discrepancies of capacity and skills

Tourism development in Karimunjawa has brought economic advantage to the community. However, it is enjoyed only by small part of the population, particularly those who own assets (such as lodgings/homestay accommodation, boats for hire) and competent/capable human resources (e.g. tour leaders/tour guides). Out of 50% of the population of productive age, only 10.3% are able to contribute to the economics of tourism. The pre-welfare population in Karimunjawa is 32% with low levels of education, i.e. primary school leavers (47.98%), primary school dropouts (32.67%). The main obstacles of the success of PPT are the local people's limited capabilities and insufficient skills. In order to boost the benefits of tourism, increased capabilities and skills are needed as this will encourage more active participation of the locals in economic activity of tourism, which will hopefully become a strategy in poverty elimination.

In this research, six heads of poor households were invited for in-depth interview to elicit information on their willingness to alleviate poverty in their community through activities in tourism. The results of research indicate that poor households are willing to be involved in the tourism sector provided that they are given employment opportunities and earn enough to build their houses, to enhance their self-esteem, to maintain their health and ensure an increase in their income.

One of the obstacles and challenges is the high poverty figures. Poverty that is prevalent in Karimunjawa is poverty in terms of meager earnings due to the inability of people in managing and maximizing the potential of the local resources. Other contributing factors to poverty are interrelated such as insufficient availability of land both in quantity and quality, limited financial capital, inadequate access to technology, and most importantly, the low quality of human resources.

One of the efforts to eliminate poverty on the island is empowerment of the local people through vocational training. Under the existing

condition of the majority of the people, i.e. poverty and low levels of education, one model of empowerment is vocational training oriented to the development of the informal sector, particularly tourism, which is at present a thriving industry in Karimunjawa and which the locals respond to with additional tourism-related activities.

Vocational training is only one aspect in the endeavor to improve the quality of human resources and to create job opportunities. This training should be able to develop the relevant skills needed for a supply of manpower and the growth of opportunities for new enterprises. A number of important aspects in the development of vocational education and training are as follows: 1) it should be able to fulfill the need for employment in the informal sector; 2) it should be able to empower people at the productive age with access to the labor market and involve them in the productive economy of tourism; 3) it should include all parties concerned in an effort to establish a link between vocational training and market demand and the business world; 4) the mechanism for the training should be designed in a sustainable way and adjusted to a situation as well as the commitment and responsibility of the stakeholders; 5) it should from part of a sustainable development strategy at regional, national, and international levels.

The most important goal of vocational training for the elimination of poverty is to empower the local community not only with basic knowledge and skills but also with a real sense of ideological commitment imbued with motivation and zeal to combat poverty.

The strategies adopted to eliminate poverty in Karimunjawa should be integrated, comprehensive, and sustainable. One strategy is the development of human resources through vocational training for tourism, which can be instituted in a Community Learning Center often called *Pusat Kegiatan Belajar* in the national language, i.e. Center for Learning Activity. One important feature in the strategy to empower the local community is to equip them with not only with basic knowledge and skills but with a sense of ideological commitment so that they are strongly motivated and enthusiastic to fight against poverty.

CONCLUSION

The PPT approach shows that there is a simple win-win scenario for the growth of tourism, economic development, and poverty alleviation. This article has shown that there are many examples in which the economic activity of tourism in Karimunjawa on various scales has brought direct and indirect benefits for the poor. The growth of tourism there has benefited the community economically, as evident in the increased earnings through tourism-related activities (homestay accommodation, bicycle/ pedicab, motor-cycle rentals, guides/tour leaders, souvenir artisans and vendors as well as food sellers). Opportunities for increased earnings through tourism are already available now on small and large scales. On the other hand, the poor community still cannot play a significant role in tourism. Limitations of human resources' capabilities and lack of economic assets are classic cases for the poor. Efforts to improve capabilities are expected to reduce the effects of tourism growth on the island, and to step up the poor community's participation in the economic activity of tourism, and ultimately to help them to eliminate poverty.

This research has identified a number of issues that hamper the potential for poverty alleviation in Karimunjawa. Specifically, there is a link of backwardness between tourism and economy as a whole, i.e. dependence on products from outside Karimunjawa such as foodstuffs and handicrafts. In general, the local community's participation in the tourism sector is on the increase, e.g. as employees/workers, or rental owner but very few of them are directly involved in planning and development of tourism.

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Tourism Development and Strategy for Increasing Numbers of Visitors in Kediri

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Abstract

Tourism is one source of local revenue. The key to improve quality of tourism destination is effective strategy to develop tourism sectors. To develop tourism sector, one should emphasize on adequate maintenance of tourism destination and management. Studies have been conducted in Kediri analyzing how potential the area was for tourism destination. It was expected that number of visitors and local revenue would increase by describing both internal and external factors supporting the tourism sector in the area. The study was a descriptive study that employed mixed methods (quantitative and qualitative). The data analysis methods were SWOT analysis followed by weighing using IFAS-EFAS analysis. The findings were (a) the government of Kediri should build shopping center that highlighted the local wisdom and more shopping centers more particularly in tourist destination that had no "something to buy" yet, (b) launch various tourism programs, (c) spread information about tourism in Kediri more widely, and (d) involve various types of mass media for promoting the tourism spots in Kediri. It was predicted that the strategy of which purpose was improving quality of tourism spot along with the continuous development plan would improve tourism sector in the area. Once targeted number of visitors had been achieved, the local revenue of Kediri would increase simultaneously. Recommendation strategy is Aggressive Maintenance strategy, where institutions or organizations responsible for the tourism destination develop the area actively and aggressively. We recommend the procedures of the Aggressive Maintenance to develop logic and analytical concepts, as well as make analysis and conceptualize short and long-term priorities.

Keywords: Kediri, SWOT, Tourism Development.

INTRODUCTION

Increasing cycle of national development becomes stimulus for various sectors to improve their performance. The cycle has direct influence towards the industry which closely related to increasing quality of management in particular sector. Based on the global economic perspective, there are several sectors that potentially increase local revenue; one of the sectors is tourism. The government should take the growth of tourism sector into account. Tourism is one of the largest industries in the world getting currencies to global economy and creating new job opportunities as well as providing socio-cultural interactions [1]. Therefore, the government, more particularly the local government, as the authority and tourist organizations should establish a synergy in order to overcome issues related to tourism.

There is certain value that involved complex synergy between various components of tourism. Tourism refers to combination of phenomena and relationships as the result of interaction between tourist, business, local government, and locals in carrying out activities of which purpose are to attract or serve visitors [2]. Based on the 2011 Government Regulation No. 50 about the Grand Plan for Developing the National Tourism 2010-2025, tourism refers to any activities related to tourism and is multidimensional and multidisciplinary as the cause of need of individual or a country as well as interaction between tourists and the locals, among tourists, government, local government and business people. All components of tourism sector will have positive overview to achieve substantial value of development. The components would also have positive influence towards all related elements, network of information, coordination between government and society, and development of infrastructure. These elements should be maximized in order to accelerate the national development.

Tourism is considered as potential sector to increase local revenue. Related to that, it is expected that program of which purpose is to develop and utilize local tourism resource as well as potentials will contribute to economic development. Furthermore, tourism development should essentially be inseparable from the quality of tourism destinations or attractions as an important element of tourism. The

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development should maximize the potentials that exist. Destinations are places towards which people travel and where they choose to stay for a certain period [3], and can be recognized as a perceptual concept, interpreted subjectively by visitors, where a combination of all products, services and experiences are provided locally [4]. Tourism is an extremely complex phenomenon, which cuts across many sectors such as transportation, hotels, fresh water supplies, waste management and energy [5]. Thus, tourism destination is potential component everyone should pay attention to in tourist development.

Based on the 2012 Regulation of East Java Government No. 5 article 1, municipality of Kediri is one of the areas that meet the categories for development. Referring to the condition of the area, Kediri is a municipality in East Java with a lot of potentials for tourism but the tourism sector in the area needs some improvement, for example quality of the tourist destination is relatively low and as the effect, the number of visitors is pretty low as well.

Based on the current situation, the area should develop programs to develop its tourism sector that is determining some strategies of which purpose is to develop quality of the tourism destination in the area. There are several things to consider when tourism becomes the start of the local development. Profile of the locals should also be taken into account because the public is the one with direct access and the one to support all aspects of tourism. Using another perspective, tourism planners need to be aware of the demographic profile of residents who are in support of tourism development [6], in order to establish a set of plan that meets the local context. Direct analysis towards development program in which the locals actively participate will result in a synergic pattern for successful tourism development programs. The development programs should analyze internal and external factors supporting tourism sector because the result of the analysis may increase the number of visitors and eventually the local revenue of Kediri.

RESEARCH METHOD

The study was descriptive study with mixed method (quantitative and qualitative) approach. The data analysis methods were SWOT analysis followed by weighting using Internal Factors Analysis Summary and External Factors Analysis Summary *(IFAS-EFAS analysis).*

Data Collection

Data collection technique referred to methods used to obtain relevant data for the study. The instruments for the data collection were questionnaire, field survey and observation. The data collection method should meet the type of data the researcher needed. Table 1 described the type of data and the instruments used.

To determine the sample, the study used non probabilistic sampling technique that was to determine the respondents using Judgement Sampling technique in which the Krejcie table was involved, the level of significance was 95% and the level of alpha error was 0.05 [7]; the population was ± 1,000,000 and therefore, the total sample was 384 samples. Samples in the study are respondents who travel in tourism destinations, both local and non local tourists.

Data Analysis

SWOT analysis was one of the strategic planning methods to describe situation and evaluate one issue in the plan based on internal and external factors, namely *Strengths, Weakness, Opportunities* and *Threats* (SWOT) [8].

Table 1. Required Data

No.	Variable	Type of Data	Data Observation Technique
1.	Transportation	▪ Physical condition and road ▪ Route ▪ Time ▪ Means of transportation	Field Observation
2.	Tourism Spot	▪ Potential aspect of tourism to develop (nature, culture, and special interest) ▪ Unique aspects and various tourism attractions being offered ▪ Popular Tourist destination	Field Observation and Interview
3.	Facility	▪ Current condition of infrastructure and facilities for tourist ▪ Tourist's perception on the infrastructure and facilities	Field Observation and Questionnaire
4.	Information and Promotion	▪ Source of Information and tourist promotion	Field Observation, Interview and Questionnaire

Overall, SWOT may be divided into two parts: the first part was SW, mainly used to analyze the internal conditions. The second part was OT, mainly used to analyze the external conditions [9]. SWOT analysis, also known as SWOT matrix, had often been used in field of business and extended to that of natural resource manage-ment in order to assess a given decision, project or policy directive in a systematic manner [10].

In the study, the objective of the SWOT analysis was to identify internal and external factors that had direct influence towards tourism destinations. We analyze opportunity and strength of the area to design plans for the future and overcome weakness and threats with the plans. The method was based on two tiers of analysis which were conducted separately. First step was to analyze the internal factors (local analysis) which contained a discussion on strengths and weaknesses according to the aims of the SWOT. The second step was to analyze the external factors (global analysis) which contained a discussion on relevant opportunities and threats (positive/negative framework conditions, potential chances and risk [11].

In utilizing SWOT, there were some alternatives based on combination of the following aspects, namely:

a. SO strategy, utilizing optimal strength (S) to get opportunity (O)
b. WO strategy, minimizing weakness (W) to get opportunity (O)
c. ST strategy, utilizing optimal strength (S) to anticipate or deal with threat (T) and turning threat into opportunity.
d. WT strategy, minimizing weakness (W) to avoid threat (T) better.

The variables involved in the SWOT analysis were ones related to the internal and external factors of the tourism destinations. Tourism destination was frequently referred to as destination mix, which was described with the following elements: attraction, facilities, infrastructure, transportation and hospitality [12]. The tourism destinations were made up of four elements frequently referred to as 4A such as access, amenities, attraction, and ancillary [13]. According to the World Tourism Organi-zations [14], there were six elements of tourist destination such as amenity, access, attractions, human resources and price. The three main components of a tourist destination were made up of facilities, infrastructure and tourism destination [15]. Based on the 2011 Government Regulation No. 50, the variables that composed tourist destination were:

a. Tourist Attraction
b. Public Facility
c. Facility for Tourist/ Visitors
d. Accessibility
e. Public Participation

Other components of the data analysis were internal strategic factor (IFAS) and external strategic factor (EFAS). IFAS consisted of strength and weakness while EFAS consisted of opportunity and threat. IFAS-EFAS analysis was development of SWOT matrix analysis. The basic concept of the development and strategy started from determining criteria and weighting of the factors resulting from the SWOT analysis. The result of the weighting was quadrants. The quadrants would determine development plan of the weighting sectors.

IFAS-EFAS was determined by evaluating all aspects of SWOT (internal and external factors) related to the 5 variables mentioned previously and giving score between 0.00 and 1.00. The total weighting of all the factors would result in 1. The following step was multiplying the weighting of all of the factors and the rating that had been designed previously, and the total would determine X and Y factors. The researcher then calculated X (strength-weakness) and Y (opportunity-threat) factors and put the result into the IFAS-EFAS quadrant in order to describe direction for the strategies.

RESULT AND DISCUSSION

SWOT Analysis

The SWOT analysis for the tourism destination in Kediri showed in Table 2. We developed an alternative by combining each of the aspects with SWOT strategy matrix as follow:

- Strategy that correlated Strength and Opportunity, exploring the cultural heritage, natural resources, and elevating available tourism attractions

  Strategy that correlated Strength and Threat, more exploration towards the tourism attractions thus they had competitive advantages and able to compete against other tourism attractions in other areas
- Strategy that correlated Weakness and Opportunity, improving quality and quantity of tourist facilities and building, e.g. shopping centers especially in cultural tourism destinations that seemed to attract more visitors.

Table 2. SWOT Analysis on Tourism in Kediri

Internal Factor		External Factor	
Strength	**Weakness**	**Opportunity**	**Threat**
• Various type of tourism destination (nature, culture, and man-made) • Scenic nature (mountain and waterfall) • Several cultural heritage • Well-known souvenirs (tofu and handicraft) • Friendly locals and safe environment • *Simpang Lima Gumul* as the landmark of Kediri as well as *Kediri Lagi* slogan representing the landmark	• Lack of shopping center and local souvenirs in nearly all tourism destinations in the area • Limited number of industry highlighting the local wisdom of Kediri • Lack of information center and means of promotion • No tourist program available • Most of the roads to the tourism destination are in poor condition • Traffic signs are in poor condition	• More visitors visit the cultural tourism destinations • Visitors respond the natural and cultural tourism destination positively resulting in non-direct promotion. • Potentials for cultural preservation • Various cultural attractions for visitors to select	• Similar tourism destinations nearby • Lack of public participation in developing the local tourism • Lack of investors

Source: Data Analysis, 2016

- Strategy that correlated Weakness and Threat, increasing information and promotion about tourism destination in the area and inviting the public to take active participation in developing the tourism destination in the area.

IFAS-EFAS Matrix

In order to obtain the score of each of the factors, IFAS-EFAS analysis was conducted to determine criteria and weighting in each of the factors and those that became the result of the SWOT analysis. The steps of the IFAS-EFAS analysis were weighting the factors after the SWOT analysis was conducted. Having finished the weighting, the researchers rated the aspects indicating their levels of importance. The rating should meet the criteria decided previously. The rating in the IFAS-EFAS analysis for the tourism sector in Kediri was determined by the following assumptions:

- Criteria 1 was rated 1 (low)
- Criteria 2 was rated 2 (fair)
- Criteria 3 was rated 3 (high)

Based on Table 3, the total weighting was multiplied by rating represent how the tourism destination reacted to their internal strategic factors. The scores for Strength and Weakness were 1.119 and 1.500 respectively; the weakness score was higher than that of strength. Therefore, the first step in the development program was to solve and prevent the internal problems in the tourism sector of Kediri since the factors had significant influence towards tourism development in the area. Once the issues had been identified and solved, the development plan would run smoothly.

Table 3. IFAS Analysis

Strength	Score (b)	Rate (r)	b X r	Weakness	Score (b)	Rate (r)	b X r
Various type of tourist destination (nature, culture, and man-made)	0.119	3	0.357	Lack of shopping center and local souvenirs in nearly all tourist destinations in the area	0.095	3	0.286
Scenic nature (mountain and waterfall)	0.095	2	0.190	Limited number of industry highlighting the local wisdom of Kediri	0.048	3	0.143
Several cultural heritage	0.071	2	0.143	Lack of information center and means of promotion	0.119	3	0.357
Well-known souvenirs (tofu and handicraft)	0.024	2	0.048	No tourist program available	0.024	3	0.071
Friendly locals and safe environment	0.048	2	0.095	Most of the roads to the tourist destination are in poor condition	0.071	3	0.214
Simpang Lima Gumul as the landmark of Kediri as well as *Kediri Lagi* slogan representing the landmark	0.143	2	0.286	Traffic signs are in poor condition	0.143	3	0.429
TOTAL	**0.500**	**13**	**1.119**	**TOTAL**	**0.500**	**18**	**1.500**

Table 4. EFAS Analysis

Opportunity	Score (b)	Rate (r)	b X r	Threat	Score (b)	Rate (r)	b X r
More visitors visit the cultural tourist destinations	0.207	3	0.621	Similar tourist destinations nearby	0.103	2	0.207
Visitors respond the natural and cultural tourist destination positively resulting in non-direct promotion	0.069	3	0.207	Lack of public participation in developing the local tourism	0.155	2	0.310
Potentials for cultural preservation	0.138	2	0.276	Lack of investor	0.052	2	0.103
Various cultural attractions for visitors to select	0.276	3	0.828				
TOTAL	**0.690**	**11**	**1.931**	**TOTAL**	**0.310**	**6**	**0.621**

Based on the EFAS analysis (Table 4) the result of the multiplication of weighting and rating of Opportunity was higher than that of Threat. In other words, opportunity had more significant influence towards the tourist development strategy for the tourism sector in Kediri. Therefore, the opportunity related to the tourism in Kediri should be explored optimally because it would improve the quality of the tourist destination in the area.

Based on the result of the IFAS-EFAS analysis, the following equation was used to determine X and Y factors that became the inputs in the strategic matrix (Fig. 1). The equation was as follow:

$$X = \text{Strength} - \text{Weakness}$$
$$= -0.381$$
$$Y = \text{Opportunity} - \text{Threat}$$
$$= 1.31$$

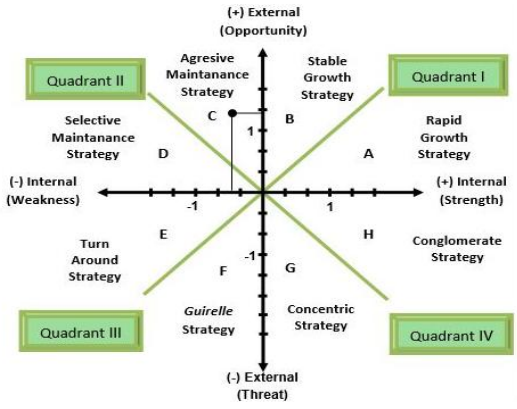

Figure 1. IFAS EFAS Matrix (**Source:** Data Analysis, 2016)

Having finished the SWOT analysis towards the variables related to the tourism sector in Kediri, the researchers conducted weighting and IFAS-EFAS analysis of which purpose was to create quadrant. Based on the previous analyses, the meeting point was on quadrant II area C. Therefore, the most suitable strategy to develop the tourism in Kediri was Aggressive Maintenance strategy, where institutions or organizations responsible for the tourist destination develop the area actively and aggressively.

Aggressive Maintenance Strategy

The procedures of the Aggressive Maintenance are developing logic and analytical concepts, as well as making analysis and conceptualizing short and long-term priorities as guidelines for designing steps, actions, tips and tactics. Thus the development programs for tourism would meet the purpose, target and output that had been set previously. The strategy being developed focused on solving challenge and issues related to developing the quality of the tourist destination in Kediri. Therefore, several strategies that would improve the tourism sector in Kediri were as follow:

- Build shopping center that highlighted the local wisdom and more shopping centers more particularly in tourism destination that had no “something to buy” yet
- Launching various tourism programs for visitors to select

Distribute information about tourism in Kediri more widely, including having more traffic signs, involving various types of mass media for promoting the tourism spots in Kediri and improving the tourist facilities such as means of transportation and accommodation.

Strategy for tourism development in Kediri is in form of repair and development of facility. As key priorities in tourism development strategy are formulated to: Improve public facilities, Optimize road condition for better access, Develop more restaurants and accommodations, and Develop souvenir shops [16]. It can be concluded that the existing facilities in tourist destinations is an important component in process of developing tourism destinations.

Aggressive Maintenance strategy expected improvement in terms of quality of the tourism

destination in Kediri. As the result, the number of visitors and the local revenue would increase.

CONCLUSION

Aggressive Maintenance is the strategy used in developing the tourism sector in Kediri. It refers to a strategy where institution or organization responsible for tourist destination actively and aggressively develops the tourism destination. The strategy focuses on solving issues or challenge related to the program of which objective is increasing quality of the tourist destination in Kediri.

The Aggressive Maintenance strategy represented several components to develop the tourism destination in the area, namely (a) optimizing shopping centers that incorporate the local wisdom and cultural heritage of Kediri, (b) launching several tourism programs, (c) optimizing public relation staffs to promote the tourism destination, and (d) maximizing selling point of the tourism destination which is systematically run through relevant marketing strategy.

It is pivotal to revisit various technical strategies in managing local tourism destination. The study functions as stimulus for tourism sector in other areas. It is expected that they will increase their management system. The study can further be developed into micro research focusing on smallest part of the substances of tourism. It is expected that other means of analysis give additional value for related studies. Future researchers should conduct studies related to public awareness as the object in synergic management of local tourism. Source of local revenue will be relevant to the vision of the national development of which focus is development of tourism.

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MANUSCRIPT SUBMISSION

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Competitiveness of destinations, products and Indonesian tourism business; Diversification of tourim products; Incentive system of business and investment in tourism; Information, promotion and communication in tourism; Tourism supporting infrastructure; Security and convenience in tourism; Tourism policy; Unique tourism community life (living culture); Local knowledge, traditions, and cultural diversity; Diversity and attractions in ecotourism; Diversity of natural attractions in ecotourism; Pluralistic diversity of ecotourism society; Diversity of ecotourism activities; Hospitality of the local resident; The quality of torism services; Quality of HR in tourism (Standard, accreditation and competence certification); The market share of tourism and integrated marketing system; Package of tourism attraction; Development of tourism regions; Community based Eco-Toutirsm.

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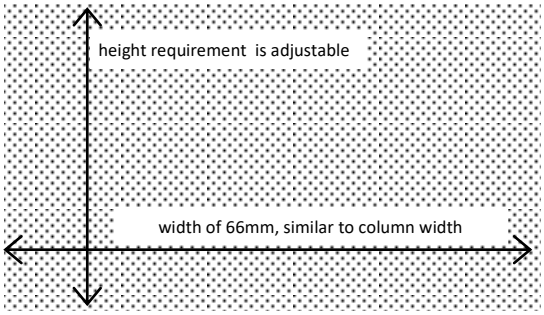

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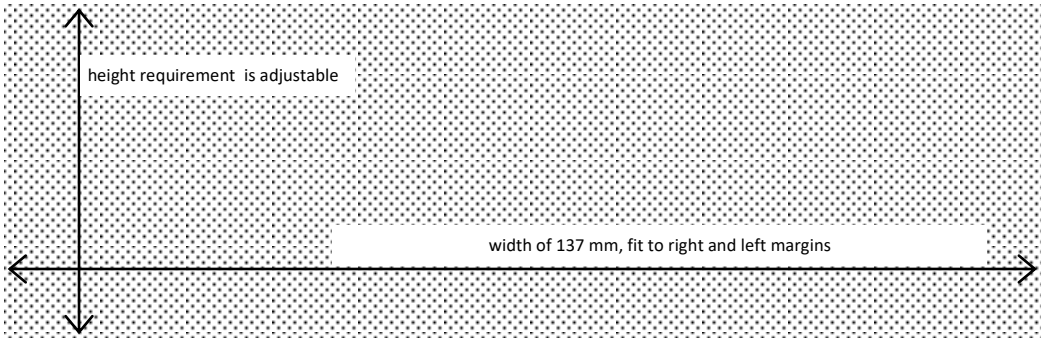

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