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Implementation of MEE (*Medical, Education, Eco-Tourism*): A Strategy For Collaborative Forest Management In Meru Betiri National Park, Indonesia

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Abstract

Global issues of greenhouse effects include the depletion of the ozone layer and the increases ground surface temperature. Responses to these issues have been attempted to empower and enhance the role of community participation in sustainable and equitable forest resource management. Since 1993 *Konservasi Alam Indonesia Lestari* (KAIL) – an Indonesian NGO in Jember Regency, East Java- starts empowering the forest buffer community with MEE (Medical, Education, Ecotourism) site model. The purpose of this paper is to describe the model of MEE in empowering forest buffer communities, describe the ecological, economic and social impact of the model, and describe the collaborative forest management. The success of MEE site model reduces negative perceptions on communities that have less conservation awareness. Community-based forest resources management need to integrate ecological and economic value in achieving forest conservation and community's welfare.

Keywords: MEE (medical, education, eco-tourism), forest management, Meru Betiri National Park

INTRODUCTION

Forest resources of Indonesia are abundant with vast forest area approximately 120 million acres. The potential was believed to be a direct income for about 25% total of the Indonesian population that lived in and surround forest areas [1]. Forests also provide indirect benefits that often priceless, including function of water management systems to prevent flooding during the wet and drought season [2].

International community recognizes the existence of Indonesian forest resources as one of the most important parts to maintain the ecological balance of earth in cross-generation functions [3]. Indonesia forest functioned to absorb emissions of various gases and toxic pollutants [4] that cause increased greenhouse effect and depletion of the ozone layer. In the history, the forestry sector is always occupied a strategic role for various purposes, particularly for the fulfillment of achieving the welfare and prosperity of all community.

Ironically, forestry tends to always present a paradoxical reality. It is said that the renewable sector, the activities continues to be sustaineble. However, the fact is forestry activities on the

verge of destruction now [5]. The forestry industry in the downstream that ranging from plywood, sawmill, molding to furniture is in agony. Otherwise, forest management activities in the upstream through forest concessions are almost death. The hot issue that is spread in various circles did not mention the existence of state institutions in the forestry sector with all senior foresters. All components of forestry society that has concern the development is threatened with extinction.

At the global level contemporary issues, symptoms of greenhouse effect include the depletion of the ozone layer and the Earth's surface temperature getting more increases [1]. Climate anomalies such as changes in temperature and extreme seasons either in the tropics and the polar regions has led to the emergence of a various natural disasters. The most notable disaster is forest fires that led to the causes of enormous damage to forests. Yet for centuries, this changing climatic conditions prevailing in different regions of the world recently has never happened before.

In response to these issues, we attempt to empower and enhance the role of community participation in sustainable and equitable forest resource management. Thus, since 1993 Indonesian NGO *Konservasi Alam Indonesia Lestari* (KAIL) starts empowering the forest edge

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community with MEE (Medical, Education, Ecotourism) role model.

The first stage of this implementation model is Medical (planting of medicinal plants). This step is intended to preserve endemic biodiversity of Meru Betiri National Park, e.g. kluwek (*Pangium edule*), Kemiri (*Alleurites mollucana*), Joho lawe (*Terminalia balerica*) and Kedawung (*Parkia roxburgi*). Secondly, education about herbal cultivation efforts strived in the form of learning discourse for local community, especially educated inhabitants. So in the future they understand potential crops of Meru Betiri that contain high benefits such as medicinal content. Third, Ecotourism (nature tourism); optimize community empowerment after planting. Re-lush forests strived to provoke public interest either inside or outside the region to directly assess the diversity of medicinal plants and shrubs. This strategy is act as natural socialization and recreational [6] medium for anyone who wants to enjoy the beauty and coolness of nature. Therefore, we purpose this paper to describe the model of MEE in empowering forest edge communities, describe the ecological, economic and social impact of the model, and describe collaborative forest management that fair, conserve and sustainable.

The Meru Betiri National park

The Meru Betiri National Park (MBNP) is located in Banyuwangi and Jember Regency, East Java Province. The width of MBNP area reached 58 thousand hectares which divided into various zones, i.e. 27.915 ha core (special preservation) zone, 22.622 ha wilderness zone, 1.285 ha intensive use zones, 4.023 ha rehabilitation zone, and 2.155 ha special use zones. Core zone is an absolute protected area and there should be no human activity that alters the region, except those related to science, education, and research. MBNP is geographically located at 113038'38" - 113058'30" E and 8020'48" - 8033'48" S. Topography of MBNP is generally hilly with elevation ranges from sea edge to a height of 1.223 m above sea level of Mount Betiri's Peak.

Meru Betiri forest areas are covered mainly by the tropical rain forests. It has some dominant plant species such as Bayur (*Pterospermum javanicum*), Bungur (*Lagerstroemia speciosa*), Glintungan (*Bischoffia javanica*), Segawe (*Adenanthera microsperma*), Aren (*Arenga pinnata*), Bendo (*Artocarpus elasticus*), Suren (*Toona sureni*), and Langsat (*Lansium domesticum*). Some plant species are endemic, including *Rafflesia zollingeriana* – a parasitic plant species on host plants *Tetrastigma* sp; and other typical plant species, *Balanophora fungosa*.

In the 58 thousand ha forest, there is also the vegetation of Bubat Bamboo (*Bambusa* sp), Wuluh Bamboo (*Shizastychyum blumel*), and Lamper Bamboo (*Shizastychyum branchyladium*). Other biodiversity are various types of rattan which is endemic in Meru Betiri, i.e. Manis Rattan (*Daemonoropos melanocaetes*), Slatung Rattan (*Plectomocomia longistigma*), and Warak Rattan (*Plectomocomia elongate*).

MBNP have several well known points of natural attractions, e.g. Sukamade and Bande Alit. Sukamade is a well-known turtle landing area and frequently visited by foreign tourists. Statistical data on MBNP visits showed that most tourists are attracted to visit the white sandy beaches in the national park, and less attracted in and around forest communities.

The MEE Concept

MEE (Medical, Education, and Ecotourism) is a model of collaborative forest management that emphasizes three basic principles, i.e. medical (cultivation of medicinal plants), education (learning media or research) and ecotourism (nature tourism).

Medical (Cultivation of Medicinal Plant)

We meant biodiversity conservation on native medicinal plants (endemic) in Meru Betiri. Medicinal plants are plants which part of the plant (roots, stems, bark, leaves, roots, fruit, seeds and sap) has medicinal properties and used as a raw material in the manufacture of modern or traditional medicine. Zuhud *et al.* [7] explained medicinal plants as entire species of medicinal plants that are known or believed to have medicinal properties. It grouped into traditional medicinal plants, modern herbs medicine, and the potential medicinal plants.

Meanwhile, Hadipoentyanti and Rostiana [8] stated medicinal plant is species that part or all parts of the natural plant exudates are used as a drug, substance or herb medicines. Similar to Gunarto [9], medicinal plants is one, some or all parts of the plant (leaves, flowers, roots, stems, rhizomes, tubers, seeds and sap) which contain the active compound that affect on health care and disease prevention.

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Education

Ecotourism development should contain elements of education to change the attitudes or behavior of a person to have concern, responsibility and commitment to the environment conservation. Ecotourism development should also increase awareness and appreciation to nature, the values of the historical and cultural heritage, and provide additional value and knowledge for visitors, community and stakeholders. Ecotourism also acted as a medium of learning or research (nature laboratory) for communities around and away from the main forest, especially students. They can investigate drug content of the plant's parts (fruits, leaves, stems, bark to roots). Development of ecotourism product should fullfil these five criteria: (1) optimizing the uniqueness and distinctiveness of the area as a tourist attraction; (2) utilizing and optimizing the traditional knowledge which natural and cultural conservation-based and the additional values of daily lives of community; (3) optimizing the role of local communities as local interpreters of ecotourism products; (4) provide a qualified and valued experience to visitors; and (5) packed in the form of communicative and innovative delivery techniques.

Ecotourism

Ecotourism is an organized tourist activity in natural areas, such as national parks [10]. Ecotourism allows interaction and learning about biodiversity in national parks can last well and provide valuable experience for tourists. Ecotourism has the objective to improve the welfare of the forest's surround community. East Java is potential area for eco-tourism destination, because there are four national parks - Bromo Tengger Semeru, Baluran, Alas purwo, and Meru Betiri [2].

Implementation of community empowerment with MEE is an approach to capacity enhancement of farming as forest buffer (buffers-zone) by three elements; Medical, Educatian and Ecotourism. Approach toward this model responded to the level of concern for the forest resources ecosystem, but at the same time increased the community welfare [11]. MEE implementation approach is the integration of three main farmer mentoring objectives, i.e. ecological, economic and social objectives.

Site model of MEE

Implementation of MEE models in the initial period begin with creating MEE medicinal plants site model. Initial land used about seven forest rehabilitation zone of Meru Betiri in 5.470 ha area. Selected plants were the medicinal ones, such as *Kluwek*, *Kedawung*, *Kemiri*, etc. Realization of the MEE site model conducted with the following steps.

Site Assesment

Observation and recognition process was conducted to determine the ecological conditions and socio-cultural of forest buffer community. Close and comprehensive approach was made in implementing MEE. If the guide know the real condition of the forest, then the strategy of involving communities in forest management affect the improvement on the forest condition. Some basic ecological output that was expected on locations assessment process is geographic soil texture, diverse plants and animals. Direct observation showed that Meru Betiri forest is geographically hilly and wavy. Plant species in Meru Betiri forest divided into staple crops and intercropping plants (seasonal).

In socio-cultural context, the forest buffer community of Meru Betiri - especially in Jember Regency –consists of Andongrejo, Curahnongkoh, Sanenrejo and Wonoasri. Daily interactions of these groups are strongly affected by tradition of Madura [12]. With relatively limited educational background – the average education is elementary school graduate – almost total livelihoods of local communities depend on forest resources. Therefore, at a certain point, conflict frequently occurs with forest managers due to different attitude with community, similar to Borneo Community research [13]. For the community, forest is a gift of God and the creation is intended to be used for human survival. Otherwise, the State as emphasized the existence of the forest, even though the existence of communities around the forest has been there first before the State was established. This is what broke the way the community views forest differ with forest managers (Ministry of Forestry). For communities, forest should be *open access*, not *close acces*. The pattern of this point of view is attempted by NGOs KAIL with mentoring patterns of MEE strategy, where people could understand the functions of the forest and on the other hand the society also gets welfare for their life.

In addition, persona and administrative officer were identified by assessment performance development at rural authority level. Territorially, the management power on demographic interaction of community is the responsibility of the village leaders [12]. MEE implementation could run more effectively by cooperation pattern with the village government officials. KAIL also built communication patterns with village officials on running MEE program that could be especially beneficial for community, while in general village get revenue (income) – that if MEE zone achieved to be attraction for community to visit.

The site assessment process of MEE implement in one of Meru Betiri forest area. We develop partnership program with the support of VSO-Spark Netherlands that hold consistent in environment conservation, especially forest resources. Site assessment efforts were conducted to optimize the MEE zone that could provide mutual benefit.

Figure 1. MEE Site Assesment by Mike and Stumpal (VSO-Spark, Netherlands)

Establishment of Institute Organization

After the site assessment, KAIL performed an internal mentoring formation. The guide will be directed into facilitators of an integrated and sustainable community development. The next step is forming community groups that will be involved in MEE activities. Once the group is formed, the guide together with group members create consensus (agreements) that apply for groups, e.g. scheduling group meetings, selecting the main endemic plant species for forest, plant spacing to deposit due to the Joint Venture. Joint Venture income derived from savings of each member so that at any given moment will be used, such as to purchase fertilizer.

In the realization of the MEE region establishment, three groups were made with 43 members. Majority of the community members

have black records on the use of forest resources. The selection of the communities group was based on the assumption that if the group of *bromocorah* – freebooters (timber and wildlife stealth) – is controlled, then MEE implementation will be realized.

Primary Crop Planting

After the mentoring process, primary crops that have been selected planted in accordance with the native plants of the area, i.e. Kedawung (*Parkia roxburghii*), Kluwek (*Pangium edule*), Trembesi (*Enterolobium saman*), Pule Pandak (*Rauwolfia serpentina*), Javanese Chili (*Piper retrofractum*), and Kemukus (*P. cubeba*). As additional, primary crops was intercropped with medicinal plants [12], such as peanuts, corn, spices (ginger, turmeric, etc). The intercropping crops will be stopped if the primary plant has been enlarged, because intercropping crops is not classified as shade tolerant.

Figure 2. Plant Seedling by Community Groups and KAIL

Improving the Quality of Human Resources

Within the enrichment framework of perception, resident's activities are planning techniques, implementation, post-harvest handling, and marketing strategy. Capacity strengthening is needed to aware the community about the crucial of future forest resources, and at the same time maintains independent or self-help willingness. The existence of community groups who aware the importance of forest would lead to the coluntary rangers or keeper for the forest ecosystem. At the stage of community capacity building, the guide aware that community participation is the main pillars of success. Therefore, several activities should be done. First, we conducted a focus group discussion. This focus group discussion is directed to find solutions [14] against group's problems such as forestry technical issues (planting and caring) in accordance with the model of local wisdom. In addition, group discussions can be pursued as a means of control when a member violates the collective agreement.

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The second is forestry cultivation training. Training activities of forestry plants pursued towards technical knowledge of modern planting as farmer's enrichment material. Third, we conducted benchmarking study. This activity is carried out in order to enrich the knowledge of farmers about other farmers outside their area. In addition, this step can be a medium to share their experiences related to advantages and disadvantages of forest conservation and community development. The site for the benchmark is Association of Metra Medica Malang, which has a specialist on medicinal plants (Medical).

Creating and Developing of Productive Bussiness

Productive activities directed to increase community incomes while waiting primary crops to bear fruit. Productive business is expected to sustain economic power of family. The type of activities is in the form of development of existing productive business or opens a new business. For women who succeeded in business is on the manufacture of medicinal products. Initially, we managed to set up a group of Family Medicinal Plant (TOGA – *Tanaman Obat Keluarga*) named SUMBER WARAS which is located in Andongrejo Village, District of Tempurejo – Jember. The types of herbs that successfully created are instant or powder medicinal herbs. Some various medicinal herbs were successfully made from simple to complex compound, i.e. instant turmeric, tamarind, ginger, up to for stroks up and cancer solution [15].

Strengthening of women's groups in MEE activities were designed as an effort on women's participation in forest resource management. TOGA is commonly found in home garden of a home that running household bussiness [16]. However, women participation is part of gender emancipation, where women are also reserve the right to seek independent economic income.

Development of Recent MEE Site Model

Site model of MEE showed significant growth towards improvement on forest ecological system. The tress increasingly dense and enlarged, much more cool air condition and sighted animals (e.g. birds, snakes, etc). Some positive impacts for biodiversity conservation in Meru Betiri are described below.

Ecological Improvement

Ecological results of MEE are medicinal plants (medical) that has been cultivated regularly from Meru Betiri forest getting dense and enlarged, i.e. Kedawung (*Parkia roxburghii*), Kluwek (*Pangium edule*), Trembesi (*Enterolobium saman*), Pule Pandak (*Rauwolfia serpentina*), Javanese Chili (*Piper retrofractum*), and Kemukus (*P. cubeba*).

For animal species, the rehabilitation zone (particularly in the area of MEE site model) has various fauna such as finches (*Pycnonotus aurigaster*), nightingale (*P. goiavier*), orange nightingale (*P. bimaculatus*), Javanese Munia (*Lonchura leucogastroides*), jungle fowl (*Gallus gallus*) and various types of eagle. There are also several kinds of mammals such as deer (*Muntiacus muntjac*), wild boar (*Sus* sp.), Pangolin (*Manis javanica*), long-tailed macaques (*Macaca fascicularis*) and various types of snakes.
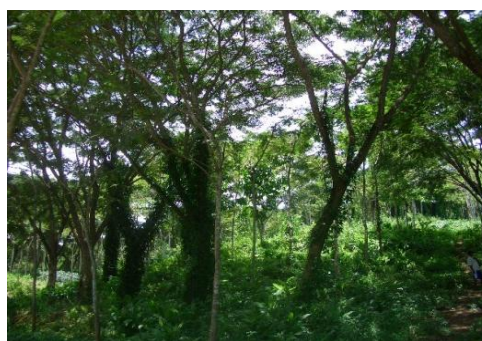
Figure 4. Ecological Condition of MEE Site Model

Educational Improvement

MEE site model have improved the ecological conditions. KAIL activist published this good condition to public through seminars invitations and other events to make people interest to visit this site model. Numbers of schools surround the forest of Meru Betiri visited MEE site model to see directly morphological diverse of medicinal plants grown. In terms of education, there are three strategies that designed to add community linkages among community, especially students and educator. First strategy is diversification of shade tolerant medicinal plants such as Javanese chili, turmeric, ginger, etc. This model is intended to aware visitors to not only see the primary medicinal plant in the forest but they can also get related knowledge on TOGA plants surround them that have medicinal benefits.

Second strategy is the preparation of conservation educational module. This module was intended to encourage the development of

the MEE program on conservation education by distribute conservation module for elementary and secondary schools. The module is made in a participatory manner with the involvement of teachers in school that directly adjacent to the forest. The schools that involved are MI Al-Hikam Langon Ambulu, MTs Bustanul Ulum Curahtakir and MTs Addimyati. KAIL expected that future conservation educational module help the students to understand and realized the essential of forest conservation for life. In addition, the presence of the module is expected to emerge conservation cadres who voluntarily maintain the ecosystem of forest resources.

Third strategy is establishment of natural laboratory miniature in school, i.e. built the mini site model in school. The purpose is to introduce types of medicinal plants and their morphology as the miniature of Meru Betiri forest. This miniature was expected to help the teachers clarify their statements about medicinal plants.

Natural Tourism Attraction (Ecotourism)

MEE site model that have been made got numbers of visit from both inside and outside the area. Teachers from such surround school nearby Meru Betiri visit the site model, while from outside the area is forest farmer groups of Pandegelang, Banten, West Java.

Figure 7. Visitation to MEE Site Model
(a) Science Teacher; (b) Dr. Allison-AusAID

Their visitation purposes include outdoor recreation, knowing the characteristics of the tree, supply of fresh air, animals watching, etc. The improvement of ecological conditions in MEE site model provokes community's interest. We expect the MEE site model could be applied also in another barren land that located in rehabilitation zone of Meru Betiri forest area. The ecological condition of the forest is getting better and interest of community to visit the site model also getting greater. Ecology enchantment of the MEE site model also invite foreign tourist, Dr. Allison from *Learning Programme for Islamic School* (LAPIS) of the AusAID (Australia). Partnership program were designed together, i.e. introduce the diversity of forest (biodiversity) to students from an early age and develop program for other areas.

CONCLUSION

The strategy of community empowerment with MEE (Medical, Education, and Ecotourism) techniques in Meru Betiri forest rehabilitation zone deliver improvement to forest ecology. The success of MEE site model reduces negative perceptions on communities of Meru Betiri buffer forest that said to have less conservation awareness. Assistance to community needs exemplary and tenacity efforts in changing the character of the community to become aware and participate in conserve the biodiversity resources of the forest. The process of forest resources management by involving the community, need to integrate ecological and economic value in achieving optimum results. It means that besides planting the trees, community should be able to take the economy benefits from the forest such as non-timber products (fruits, medicinal palnts, honey bee, etc).

SUGGESTION

We suggest replicating the MEE site model. The result of the collaboration patterns on conservation efforts between community and forest managers are expected to be input for environmental activists and policy makers to be developed in other areas.

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Tourist Perceptions on Supporting Infrastructure Facilities and Climate-Based Visiting Time of Ngebel Lake, Ponorogo

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Abstract

This study aims to analyze the tourists' perception about the importance and satisfaction on the product of fisheries tourism, and to assess the visiting time of tourist based on climate conditions. The research was conducted in May to June 2013 in Ngebel Lake, Ponorogo. We used descriptive quantitative approach, with 45 respondents. Data collected from interview, questionnaire and observation. Analytical methods were used to determine the perception of tourists on the satisfaction and interest in fisheries tourism products, i.e. *Importance Performance Analysis* (IPA). We also used *Tourism Climate Index* (TCI) to determine the visiting time of tourist. The results show the value of satisfaction and tourist interest is low, therefore the improvement of several aspects become important. It is encompasses: a) the existence of parking area; b) the condition of Ngebel Lake; c) planning and management system, the condition of the local community; and d) activities of fish course restaurant and fish farming system of floating net cages. TCI value indicates ideal conditions for tourists traveled in Ngebel Lake is in November (convenience index value of 106), in December (97) and in April (94). This appropriate time to visit Ngebel Lake is expected to create a good impression for the tourists and enjoy the various fisheries activities in Ngebel Lake.

Keywords: Importance Performance Analysis, Ngebel Lake, Tourist Climate Index

INTRODUCTION

A form of national development is by establishing community development activities to gain a sense of satisfaction emotionally and physically [1], e.g. developing the tourism sector. Tourism is one of the crucial sector for community development. Such tourism development requires support and participation of various stakeholders, such as tourists, the government, surrounding community, or the private sector to achieve a better tourism development [2].

Tourism is a combination of human activities that performed either individually or in groups, either local or international. The tourist activity is carried out by using convenience, services and various supporting factors provided by the government or by using the services from community to meet the tourists' demand [3]. The success of tourism was determined by the capability to improve the welfare and prosperity of the community. It is an obligation and duty of tourism towards foreign exchange [4].

A tourism area offers various attractions and beautiful panoramic landscapes with distinctive features and advantages. These conditions expected to satisfy the tourists, giving benefits of offered attractions and tourist could directly participate in developing the environmental conservation to form awareness to preserve eco-friendly tourism area.

Tourist attractions can basically attract and hold tourists for longer visit and gave satisfaction and comfort to tourist. The quality is assessed from the condition of facilities, services, accessibility, and marketing that support the tourism area [2]. The perception of tourism for destination development therefore important.

Analysis of visitor perception is focused more on the condition of the natural charm of Ngebel Lake tourism related to activities of fisheries sector. Soemarno [5] stated the ratings attribute of perception for travelers are offered region's uniqueness, comfort, safety, cleanness, hospitality of surrounding communities and transportation access.

Climatic conditions are strongly influence the perceptions of tourists' demand, due to recent global climate change. As research of Suwarno [6], climate affected the comfort of tourists. Hot

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temperature reduces the convenience of tourists, thus causing a decrease in tourists visit. It is also expressed by Trenberth *et al.* (1995) in Hidayati [7], climate change directly or indirectly affected by human activities that change the atmosphere over the long period. Climate change includes gradual changes in temperature, air pressure, wind, humidity and precipitation.

Therefore, we need to assess the perception of tourist on the importance and satisfaction with the supporting infrastructure of the fisheries tourism and determine appropriate visiting time to the tourism area of Ngebel Lake.

MATERIALS AND METHODS
Study Area

Ngebel Lake is a natural resource in East Java, which is used as attractions for tourism. This lake is located in the on the slopes of Mount Wilis, with an area of 6.2 ha with elevation of 734 m asl, 38 km away of Ponorogo. Temperatures of the Lake area is 22-23°C, approximately 1.5 km wide, has a depth of 24 m, and surrounded by 5 km road.

Besides the beautiful and stunning scenery, it also has the potential fisheries tourism area, which established since the beginning of 2004 until now. The activities include fish farming with floating net cages (*Keramba Jaring Apung* - KJA) and fish course restaurant (*Rumah Makan Ikan* - RMI). However, only some of it can survive in current less stable economic situation.

These conditions showed that the availability of natural resources have attracted many people, due to the benefits that meet their needs. Nevertheless, it is realized that human activities cause environmental problems. Recently, the level of human needs increasing and encourages people to exploit natural resources excessively, and lead to damage on natural resources and environment [1].

The existence of some offered fisheries tourism activities give positive and negative impact on the lake, the tourists and the local community. The positive impact is the growing interest of tourists to visit the lake to enjoy the fish dish of RMI and education on offered fisheries attraction in Ngebel Lake. It also opens jobs opportunity for surrounding community. Otherwise, the negative impact is a reduction in the area's sustainability.

Methods

We used descriptive quantitative methods on data analysis. We determined the respondent from visitors by *Quoted Accidental Sampling*. Zaenal (2006) in Mateka [8] stated that the sampling imposed randomly on individuals or visitor that accidentally encountered visit the Ngebel Lake (usually in a holiday/weekend). The number of respondents is determine by *Linear Time Function* (T= t_0 + t_1n), resulted 45 respondent. Data was collected using questionnaires, observation, interviews and document collection. According Ancok (1995) in Kundofir [9], qualitative data were collected by observation, in-depth interviews, and available information on previously documents.

This study used two data analysis. Perception of visitors on Ngebel Lake use *Importance Performance Analysis* (IPA), combined the value of satisfaction and interest in the form of a Likert scale on supporting fishery products offered in Ngebel Lake. Second, we used *Tourism Climate Index* (TCI) to determine the visiting time based on climatic conditions. Climatological data obtained from Class 1 Station of Iswahyudi airport during 2012.

IPA analysis also proposed previously by Santoso [10], stated that the IPA analysis is a tool commonly used in assessing the perception of tourists to the quality improvement of the products or services offered by a particular tourism area. It also explained by Ekayana *et al.* [1] that IPA analysis results are used as a proposal for the improvement of certain tourism areas. This method assessed the value of each variable of satisfaction and interest of tourism's attraction attribute. This value then inserted into the Cartesian diagram and it resulted the quadrant of first priority, maintain the achievement, low priority, and ignore. The diagram implied the tourist perception of satisfaction and interests on supporting facilities and infrastructure of fisheries tourism activities. IPA formula is described below.

$$\bar{X} = \frac{\sum_{i=1}^{n} X_i}{n} \qquad \bar{Y} = \frac{\sum_{i=1}^{n} Y_i}{n}$$

Description:
$\bar{X}$ = average level of satisfaction
Y = average level of interests
n = number of respondents

Formula for the division in the Cartesian diagram:

$$\bar{\bar{X}} = \frac{\sum_{i=1}^{n} \bar{X_i}}{k} \qquad \bar{\bar{Y}} = \frac{\sum_{i=1}^{n} \bar{Y_i}}{k}$$

Description:
$\bar{X}$ = average score of all attributes of tourist's satisfaction
$\bar{\bar{Y}}$ = average score of all attributes of tourist's interest
k = number of used tourist quality attributes

Analysis of TCI was previously advanced by Cengiz *et al.* [11] to determine the decision rate for visiting the tourism's sites. It is calculated by considering several variables including rainfall, light, humidity, air temperature and wind speed in the area of Ngebel Lake. TCI equation is showed below.

$$TCI = 2\ [4\ CID + CIA + 2R + 2S + W]$$

Description:
TCI = tourism Climate Index
CID = daytime comfort index, include: average of max. air temperature (°C) & average of min. relative humidity (%)
CIA = daily comfort index, include: average air temperature (°C) & average relative humidity (%)
R   = rainfall (mm)
S   = daily duration of sun shine (h)
W   = wind speed (m/s).

Hadi *et al*. [12] explained the necessary of humidity calculation in *Thermal Humidity Index* (THI) before calculating the TCI and comfort index. THI calculation need the variable of air temperature (Ta), rainfall, humidity (RH) and wind speed in the formula:

$$THI = 0.8\ Ta + (RHxTa)\ /\ 500$$
$$TCI = 2\ \{(4xCID) + CIA + (2XP) + (2xS) + W\}$$

RESULTS AND DISCUSSION
Tourism in Ngebel Lake

Lake Ngebel is a tourism site in Ponorogo, East Java – taken from the name of the Sub-district, *Ngebel* – which established by the Government in 1984. Public transport are available from Jenangan Terminal, Ponorogo for 45 minutes, while from Madiun almost takes two hours without transit, directly via Mlilir or Dolopo Regency. Dolopo is well known for its low negotiable price of Durian because it is directly harvested from the local garden.

The nature tourism of Ngebel Lake emphasize on the beauty of the panorama. It is also supported by several attractions including water tourism, culinary, and various accessories shop and entertainment for tourists. Ngebel Lake waters also has crucial functions for fisheries which use the potential resource of the lake. Fisheries activities in Ngebel Lake including the floating net cages system for fishing, business of fish course restaurant (RMI) and conventional fishing. These activities was instrumental in decreasing the poverty by job creation and socio-economic development for local community.

The area of Ngebel Lake also provides various tropical fruits such as durian, mangosteen, pundung, and etc. The Lake also has various fish; the most dominant is Hampala fish or *Ngongok*.

Main attraction of tourism in Ngebel Lake is a beautiful natural tourism area, with impressive panoramic views, and supported by cold temperatures, less noise, and easy road access. Ngebel Lake tourism offer quite affordable tourism. The community around the area prioritizes hospitality and polite manner in providing services to tourists.

Importance Performance Analysis (IPA)

We determine the priorities on management and development of facilities and infrastructure based on the perception of tourists, which will affect the tourists' decision to the tourism area of Ngebel Lake. This priorities assessment related to the value of satisfaction and interests on the available facilities and infrastructure in the tourism area of Ngebel Lake.

Perception of Visitors

Generally perception is the effort of a person to comprehend and understand the environmental conditions that involve an interpretation institution as a media to present information on a person's psychological experience. Perception of the tourists can be expressed as participatory statement on the visited tourism area with view of tourism attraction [4].

The assessment on the tourism area of Ngebel Lake was aimed to make the area into a prime fishery tourism attraction. Development priority was need for the consideration on improvement efforts. Some of variables that not optimally support the development of Ngebel Lake tourism to be fisheries tourism area in Ponorogo are:

a) Floating net cages in Ngebel Lake are not maintained well. This condition is implied in 44% of respondents concern more attention for floating net cages conditions in setting the system to be neat and maintained the sustainability of waters environment.
b) Some fish course restaurant along the edge of the lake is lack of awareness to the cleanness around the lake. It is seen that 26% of respondents expect RMI to pay

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attention to the level of cleanliness; an offered service to the tourists of Ngebel Lake.

c) Existing fishing areas have not been maintained well, in terms of safety, convenience, and supporting facilities for fishing, e.g. rental of fishing equipment, and fish feed shop. Total of 30% respondents expect the development of the fishery activity.

d) Crucial supporting infrastructure is location of parking areas. The setting of parking area is not conducive and disorganized, caused inconvenience to the visitors.

e) The road conditions to the tourism area of Ngebel Lake are still in improvement. Total of 50% respondent expect the development and improvement on roads for smooth access to Ngebel Lake.

f) The area managers are lack of attention on environmental conditions around the lake. The management should add more signs or warning for keeping the cleanness that placed on the edge of the lake to remind the visitors.

Description on the perception of tourists to the services and facilities of the infrastructure conditions showed that Ngebel Lake still require adequate attention from the government to improve the comfort and safety of the tourists. Additional activities for fisheries tourism attraction are as follows: areas for fishing activity, floating net cages plus fish feeding activities, educational tourism (edu-tourism) on fisheries for visitors – particularly children, and specialized markets site for fish catch from aquaculture of tilapia fish. Previous study of Handayawati [13] also explained that the condition of facilities in Ngebel Lake according to the tourist's perception is 31.94% respondent prefer water attraction than others.

Level of Suitability

The rate of suitability related to fisheries sector in Ngebel Lake was 57% - 111%. Level of suitability which <100% were consisted of 20 variables. It indicated that the condition requires more attention for improving the performance of management system. The level of suitability which >100% were two variables, indicated that the performance of management system needs to be maintained. The lowest level of suitability is the variable of cleanness in the lake area, while the highest level of suitability is the natural beauty of Ngebel Lake scenery (Table 1). Handayawati [13] research also indicated that the waste management in the Ngebel Lake needs improvement from both manager and tourists.

Cartesian Diagram

Average value of satisfaction towards 22 variables in Ngebel Lake were ranged from 2 to 4.8, while average value of interest ranged from 2.7 to 4.6 (Table 2, Fig. 1). Quadrant A (Priority Quadrant/*High Importance, Low Performance*), seen from the tourists' interest, the product or service was on high level.
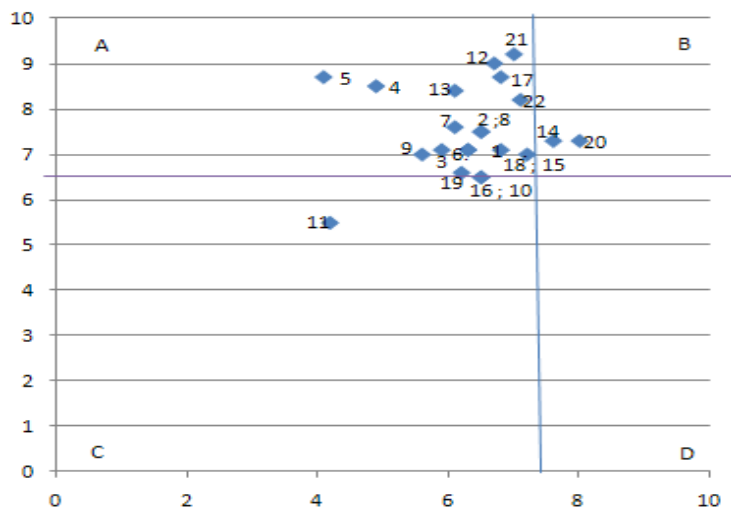

Figure 1. Quadrant of Infrastructure in Ngebel Lake

However, tourist satisfaction scores showed that 19 variables still showed a low condition, thus need improvement as its main priority, variables of: 1) parking area; 2) safety of visitor's vehicle; 3) parking attend-ants; 4) lake's edge cleanness; 5) waste manage-ment; 6) impression and leisure during visits; 7) development of fisheries' objects; 8) manager of fisheries' tourism; 9) charges of visit; 10) promo-tion of fisheries' tourism; 12) public participation in service of mat rental, food and beverage; 13) cleanness of food/snacks stall; 15) food taste; 16) site convenience of RMI; 17) service to the consumers; 18) cleanness of the RMI; 19) suitable price with the quality of service, taste and cleanness; 21) water sanitation in Ngebel Lake; 22) leisure to KJA activities in Ngebel Lake.

Quadrant B (Quadrant of continue the achievement/*High Importance, High Perform-ance*), reviewed from tourist's interest, the product or service were on high level. However, reviewed from the tourist's satisfaction indicated that the two variables is in good condition and still need to be maintained and may be improved in the system management. The two variables are variable 14 (Level of community's ability in the services provision (Polite, Smile, and greetings)) and 20 (Beautiful scenery of Ngebel Lake).

Quadrant C (Quadrant of Low Priority/*Low Importance, Low Performance*) shows that variable 11 (Ease of obtaining information on products of fishery tourism) included in this quadrant, because visitors assume that only less benefits received by tourists in Ngebel Lake.

Table 1. The Level of Suitability on Satisfaction and Interest of Fisheries in Ngebel Lake

Symbol	Variable	Satisfaction X	Interests Y	Level of Suitability	Necessary Strategy
a	b	c	d	e = c/d (%)	f
	Parking				
I.1	Parking area	3,3	3,5	94	improvement
I.2	Safety of visitors' vehicle	3,2	3,7	87	improvement
I.3	Parking attendants	2,9	3,5	83	improvement
	Ngebel Lake				
II.1	Lake's edge cleanness	2,4	4,2	57	improvement
II.2	Waste management	2	3,4	59	improvement
II.3	Impression and leisure during visits	3,5	4,3	81	improvement
	Planning and Management				
III.1	Development of fisheries' objects	3	3,7	81	improvement
III.2	Manager of fisheries' tourism	3,2	3,6	89	improvement
III.3	Charges of visit	2,7	3,4	79	improvement
III.4	Promotion of fisheries' tourism	3	3,2	94	improvement
III.5	Ease of obtaining information on products of fishery tourism	2	2,7	74	improvement
	Local Communities				
IV.1	Public participation in service of mat rental, food and beverage	3,3	4,4	75	improvement
IV.2	Cleanness of food/snacks stall	3	4,1	73	improvement
IV.3	Level of community's ability in the services provision (Polite, Smile, and greetings)	3,7	3,6	103	maintained
	Culinary Activity				
V.1	Food taste	3,1	3,5	89	improvement
V.2	Site convenience	3	3,2	94	improvement
V.3	Services to the customers	3,3	4,2	79	improvement
V.4	Cleanness	3,1	3,5	89	improvement
V.5	Suitable price with the quality of service, taste and cleanness	3	3,2	94	improvement
	***Keramba* – floating net cage**				
II.1	Beautiful scenery of Ngebel Lake	4	3,6	111	maintained
II.2	Water sanitation in Ngebel Lake	3,4	4,5	76	improvement
II.3	Leisure	3,5	4	88	improvement
	Total			1898	
	Average of Suitability Level			86,27	

Table 2. Satisfaction and Interest of Visitors

Symbol	Variable	Code	X	Y	Coordinates Satisfaction X'	Interests Y'
a	b	c	d	e	f = d/n	g = e/n
	Parking					
I.1	Parking area	1	149	156	6,8	7,1
I.2	Safety of visitors' vehicle	2	143	166	6,5	7,5
I.3	Parking attendants	3	129	157	5,9	7,1
	Ngebel Lake					
II.1	Lake's edge cleanness	4	109	187	4,9	8,5
II.2	Waste management	5	90	192	4,1	8,7
II.3	Impression and leisure during visits	6	159	154	7,2	7
	Planning and Management					
III.1	Development of fisheries' objects	7	134	167	6,1	7,6
III.2	Manager of fisheries' tourism	8	144	164	6,5	7,5
III.3	Charges of visit	9	123	151	5,6	7
III.4	Promotion of fisheries' tourism	10	144	144	6,5	6,5
III.5	Ease of obtaining information on products of fishery tourism	11	92	122	4,2	5,5
	Local Communities					
IV.1	Public participation in service of mat rental, food and beverage	12	147	199	6,7	9
IV.2	Cleanness of food/snacks stall	13	134	184	6,1	8,4
IV.3	Level of community's ability in the services provision (Polite, Smile, and greetings)	14	167	161	7,6	7,3
	Culinary Activity					
V.1	Food taste	15	139	157	6,3	7,1
V.2	Site convenience	16	144	144	6,5	6,5
V.3	Services to the customers	17	149	191	6,8	8,7
V.4	Cleanness	18	139	157	6,3	7,1
V.5	Suitable price with the quality of service, taste and cleanness	19	136	146	6,2	6,6
	Keramba – floating net cage					
II.1	Beautiful scenery of Ngebel Lake	20	177	161	8,0	7,3
II.2	Water sanitation in Ngebel Lake	21	151	202	7	9,2
II.3	Leisure	22	157	180	7,1	8,2
	Total				143,4	168,7
	Average				6,51	7,66

Quadrant D (Quadrant of Excessive/*Low Importance, High Performance*) also suggests that visitors' assumed that the level of interest and satisfaction is balance, because there are no variables in the quadrant D.

Tourism Climate Index (TCI)

Tourism climate index is a tool that used as a subjective analysis of the supporting data for perception of tourists to determine visiting time based on climate or weather conditions and tourist comfort index [11]. The variables included air temperature, humidity, rainfall, and wind speed.

Ngebel Lake included in the District of Ngebel located in altitude of ± 734 m asl. The average temperature per year is 27.4°C, the highest temperature is in October, 29°C and the lowest temperature is in January of 25.7°C. Average rainfall is 164.4 mm per year, with the highest levels of rainfall in December 533.7 mm, and the lowest in July-September 0 mm. Average wind speed per year is 417 m/s, with the largest wind speed in July 533 m/s and the lowest in February at 287 m/s. Average humidity during the past year was 73.25%, with the highest humidity level in January by 86% and the lowest in September by 59% (Fig. 2).
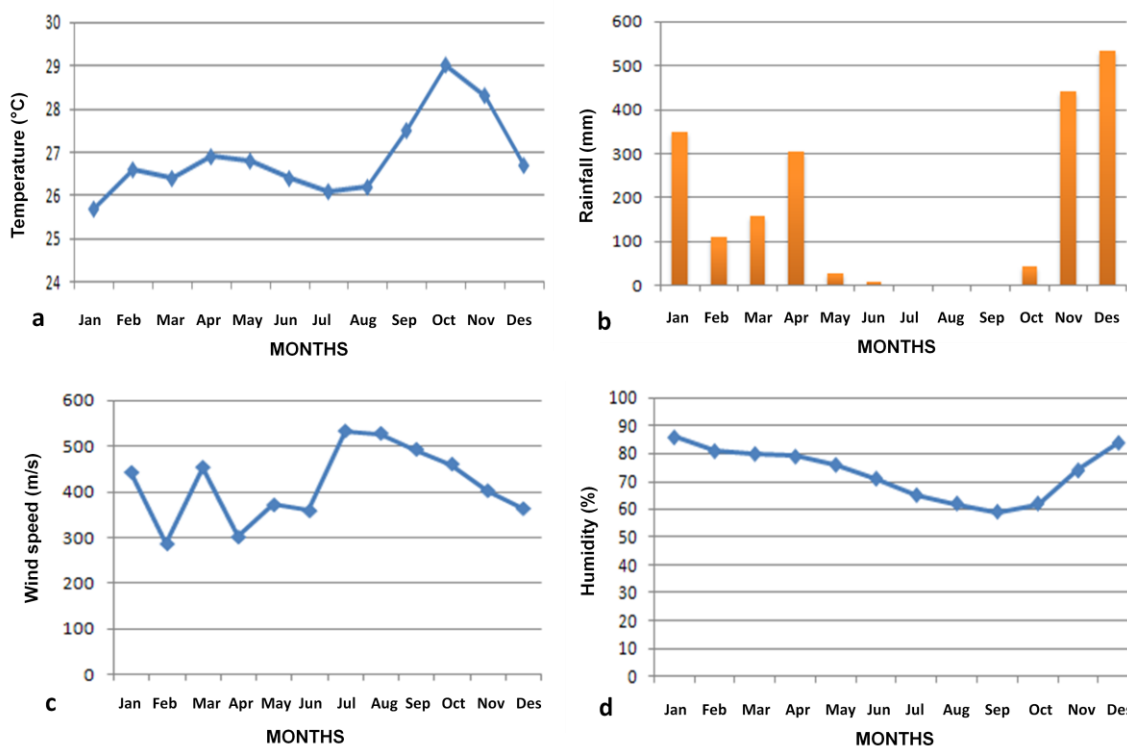
Figure 2. Climate and Weather Conditions of Ngebel Lake 2012: a) Temperature; b) rainfall; c) wind speed; d) thermal humidity

According to Diena [14], index of comfort, especially for Indonesian in tourism activities, are usually in THI range of 20-26. According to the calculation, the daily comfort index of THI for Ngebel Lake showed that January to December 2012 is favorable conditions for doing visitation, whenever they willing to. Otherwise, TCI values indicate the value of 106 in November, 97 in December and 94 in April (Fig. 3), which includes as excellent conditions for tourism activities in Ngebel Lake area. This classification based on Mieczkowski [15] who explained that TCI of 100 said to be perfect, while 80 said to be very good, 60-79 is considered good, 40-59 is acceptable, and below 40 indicates poor condition for tourism activities.
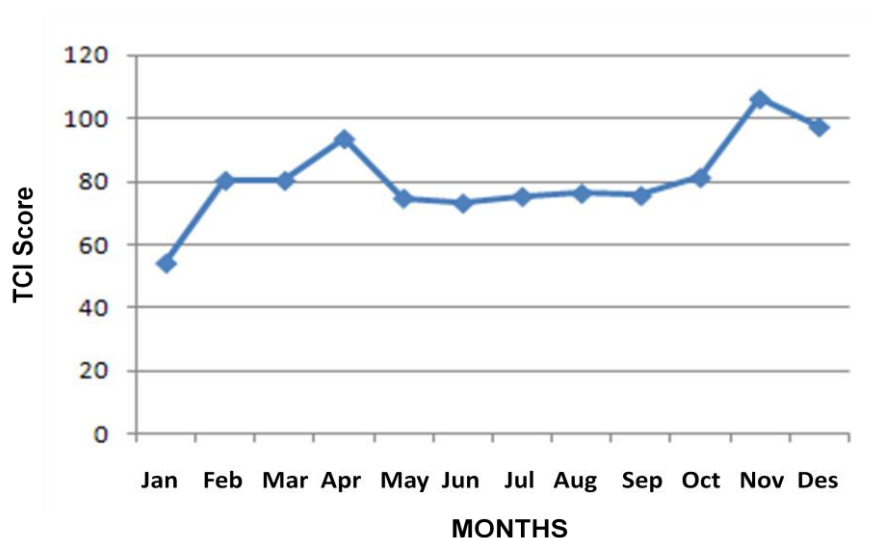

Figure 3. TCI Value of Ngebel Lake Tourism Area 2012

CONCLUSION

Satisfaction and interest of tourists to the facilities and infrastructure of fisheries tourism in Ngebel Lake showed that 17 variables are included in good condition and still need to be maintained and possibly improved. Conversely, there are five very weak variables that show a low condition which needs an improvement, i.e. park attendants, lake's edge cleanness, waste management, charges of visit, and ease of obtaining information on products of fishery tourism. TCI value indicates that preferable times to visit Ngebel Lake tourism are in April, November and December. However, other months also showed good conditions for tourist visiting Ngebel Lake.

Recommendations

Ngebel Lake management requires further study to add important input on tourism activities. Ngebel Lake also require input and support from the local government to continue the fishery tourism activities, which will be used as a media of edu-tourism, and to maintain the sustainability of fishery household income. Good cooperation between the private stakeholder and government should be maintained to develop Ngebel Lake.

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Gastronomy Tourism in Several Neighbor Countries of Indonesia: a Brief Review

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Abstract

Gastronomy tourism, also called culinary tourism or food tourism, is a kind of tourism that provide attractions based on the culinary aspect owned by a country, region, or area. It is not only offers food and beverages as the main objects in its attractions, but also everything related to food activities ranging from food ingredients, preparation, processing, serving, as well as the cultural and local values. A well-managed culinary tourism will be a supportive program in developing and enhancing the tourism sector in a country. The objective of this paper is to describe the profile of gastronomy tourism in several neighbor countries of Indonesia, i.e. Hongkong, Singapore, Thailand, and Malaysia. This brief review is also discussed the potential of Indonesia gastronomy in supporting government's tourism program. Basically, Indonesia has more enormous potential asset in managing its cultural heritages in term of culinary than its neighbor countries. A well-managed gastronomy tourism plays not only an important role in enhancing the economic sector, but also contribute in preserving the natural and cultural resources.

Keywords: gastronomy tourism, culinary tourism, neighbor countries of Indonesia

INTRODUCTION

Gastronomy tourism or culinary tourism is a kind of visit or trip based on the interest in food and beverages. People make a trip due to have an experience in tasting the culinary products that can provide an impression in their lifetime; thus, a unique and impressive culinary identity was an important asset for any succesful culinary tourism destination [1-3]. In 1998, Lucy Long introduced the term "culinary tourism" for the first time, refering to a tourism concept which tourists can experience the local culture of other countries by tasting their food [4]. Generally, traveling in the term of gastronomy tourism is always related to explore and enjoy the special cuisines which contain the destination's identity [3,4].

Gastronomy or culinary tourism is not just an activity associated with food and beverages, but it is also related to events and other culinary activities like festivals and visitations [1,5]. Culinary tourism or gastronomic tourism will continue to provide jobs for workers, services for the customer and opportunities for investors [5,7]. It is also a kind of constituent in tourism strategy dedicated to optimize the use of available resources through creativity and adaptability, due to the lack of conventional natural and cultural tourism assets [8].

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Indonesia is a country endowed with diverse natural resources, tribes and ethnicities, cultures and traditions, as well as various other uniqueness that no other country has, especially in terms of culinary. Indonesian culinary is a portrait of the diversity of plants and animals, various way in processing and presentation, and absolutely richness in taste and culture. It is an advantage that many regions in Indonesia are also popular as tourist destination for both domestic and foreign tourists. Traditional culinary in Indonesia,which are consisted of various food, beverages and munchies is an enourmous potency to support Indonesia's tourism. Enjoying local cuisines can not be separated from tourist traveling activities. Therefore gastronomy with all its aspects is a great opportunity for Indonesia to introduce and promote not only the type of dish and constituent materials, but also the variety of processes, meanings and values existed in it. Culinary tourism can be developed into eco-culinary tourism level by adding values such as eco-friendly orientation, community involvement and educational content. With proper management, traditional Indonesian culinary is going to be one of the potential attraction for tourism in Indonesia, in addition to the natural beauty and hospitality of the people.

The objective of this brief mini-review is to describe and compare the profile of gastronomy tourism in several neighbor countries of Indonesia, i.e. Hongkong, Singapore, Thailand, and Malaysia. Hopefully this paper can give some

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images about how those countries managed their resources and capital to contribute in their national tourism sector optimally. Indonesia's gastronomy profile and it's chance in supporting tourism development will also be discussed here briefly.

DISCUSSION
Gastronomy tourism in Hongkong

Hongkong is a country whose well-managed and supportive gastronomic profile in its tourism sector. Basically, Hongkong does not have affluent natural resources to create various tourism attractions, but it does have a various food and cultural backgrounds which can be arranged into an inovative tourism that attracts people's attention. The geographical position is also play an important role in making the uniqueness of its multi-ethnic food cultures, which become the core resource in developing its culinary tourism [4]. Hongkong as a commonwealth country has a unique culture that combines western lifestyle with Chinese tradition. For foodies and culinary tourists, they will state that Hongkong is one kind of "food paradise", a suitable and promising place for food and dining out. This reputation has made Hongkong as one of Asia's most popular tourism destination, and being the key to the city's tourism industry [9]. Using indigenous and authentic Chinese cuisine as a strength point, Hongkong succeed in positioning its local food as a unique cultural marker. These all advantages are also being supported by a lot of efforts in promoting its culinary tourism. Sort of brochures, booklets and website provide detailed and appealing material and photos on gastronomic attributes in Hongkong [10], and these all give much important information for tourists in selecting and deciding where to go for dining out in Hongkong. *Dim sum* is one of major culinary culture in Hongkong [4], and it is famous all over the world. There are also some food districts (e.g. Causeway Bay, Kowloon city, Tsim Sha Tsui) which are effectively promoting Hongkong's culinary tourism resources by providing various food route. Food-related museums exhibiting tea culture [4], and some annual food festival are also being some supportive events in constructing the good athmosphere in culinary tourism in Hongkong (e.g. Best of the Best Culinary Awards).

Hongkong also realized that it does depend tightly on tourism. Therefore, the general public in Hongkong is very cooperative in terms of government tourism promotion activities, e.g implemented in free tourism advertising by their entertainers, or some programs from aviation company in encouraging travel and saving tourism when SARS epidemic hit Hongkong several years ago [4]. To ensure the tourist have high cuality cuisines, Hongkong have strict quality assurance certification system. This kind of regulation can make the certified restaurant become more famous, and the other hand the tourist can enjoy the quality-assured cuisine which give them a great impression and increase the possibility of their visiting again, even their promotion to others. Hongkong Tourism Board (HKTB) brought up the Quality Tourism Service (QTS) Scheme to raise overall service standards and visitors' confidence [4]. Restaurants indicated with QTS sign made tourists can easily identify where they can dining out in standardized quality; not only the cuisines, but also the services. Other effort by HKTB is worked with marketing research companies, and the results were analyzed to develop more effective marketing strategies.

From those facts, it seems clearly that Hongkong with its limitation in area and natural resources fully realize that it must do some efforts in developing and supporting tourims as its mainstay sector in economic. Hongkong has succeeded in exploiting its unique condition (combination of western lifestyle and traditional Chinese culture) through its gastronomical assets that managed well and seriously. All these efforts play an important role in making Hongkong be one of top culinary destination icons in Asia. Hongkong is also follow-up its advantages and assets in gastronomy continuously with conducting various gastronomy-based research, and use the results as references in developing its gastronomical asset for culinary tourism.

Gastronomy tourism in Singapore

Singapore is one of the famous tourismd estination in Asia and Singapore's cuisines is one of the important aspect to attract tourists [11,12]. The power of Singapore in tourism has been supported bu high quality of human resources and services. This s actualy similar with Hongkong. Singapore has the similarity with Hongkong. Ecologically, these ara realatively poor in natural resources to support diverse foods. Most of resources were imported from surrounding contries, including ndonesia [13].

In Singapore, attracting tourist in cullinary has been promoted by slogan "Singapore: the

Food Capital of Asia". "Food" and "dining out" is the important strategy to invite visitors to Singapore [13]. In 2004, ten cuisines were determined as the top 10 representative food of Singapore. They are *Satay* (meat on a stick with onion and gravy along with it)*, Bak Kut Teh* (meat bone soup with herb and spices)*, Chilli/Pepper Crab* (stir-fried crab in a semi-thick, sweet and savoury tomato and chilli based sauce)*, Hainan Chicken Rice* (chicken served with rice cooked in chicken oil)*, Roti Canai*   (a type of Indian-influenced flatbread) *& Teh Tarik* (hot Indian milk   tea   beverage)*, Laksa* (spicy noodle soup from   the Peranakan culture)*, Fish Head Curry* (a   dish   where   the head of   an *Ikan Merah* (red snapper, literally "Red fish"), is semi-stewed   in   a Kerala-style curry with   assorted vegetables such as okra and brinjals and usually served with either rice or bread)*, Fried Kuey Teow* (stir-fried ricecake strips)*, Rojak* (traditional fruit and vegetable salad)*, and *Carrot Cake* [4]. It is clearly that Singapore does make use of it's culture diversity on food in promoting it's culinary tourism. Singapore cuisines composed from the combination of various cuisines which are also popular in several countries, for example *satay/sate,   gulai   kepala   ikan,   rojak/rujak* (Indonesia)*, bak kut the, Hainan chicken rice* (Cina)*, roti canai* (India), and *teh tarik* (Malaysia).

Similar to Hongkong, Singapore is also has some annual event or festival in term of cuisines which is effectively boosting their tourism visit, e.g. Chili Festival, Singapore Food Festival, and World   Gourmet   Summit   [14].   Large-scale international culinary festival are the greatest competitive   advantage   in   culinary   tourism because these events integrate local resources and profession from public and private sectors in bringing   local   cuisines   onto   the   international stage [4].

Some of critical connection between food and tourism can be found in Singapore where both   food   and   eating-out   are   treated   as prominent tourism promotion theme. Singapore also   has   the   policies   in   term   of   country's distinctive features [13]. According to Singapore Tourism Board, there are some dining theme in Singapore, e.g. *Sky Dining* (skyview dining in a cable-car)*, Tropical Garden Dining* (dining in an excellent   restaurant,   located   in   a   tropical garden)*,   Waterfront   Dining*   (dining   in   a restaurant near to canal, bay, river, lake, falls), *Romantic Dining,* etc. This kind of categorization prove   that   Singapore   is   realize   its   cuisine diversity and make some efforts to develope

them   seriously   to   be   a   unique   item   in   their culinary tourism package.

The Singaporean government has taken several steps to promote gastronomy to become a world class tourist destination. It recognized that   in   order   to   be   a   world   class   tourist destination, it needed to build and develop the infrastructure   including   attractions, accomodations, and restaurants. The two main approaches   were   to   develop   it's   culinary education and to promote its food through Singapore Tourism Board (STB) and Singapore International   Culinary   Exchange   (SPICE).   A program   related   to   culinary   education   are providing trainings to Singaporeans in culinary, catering, and hospitality education. There is also a public vocational school (Temasek Polytechnic) worked   with   foreign   culinary   association (Culinary Institute of America) to initially design a three   year   diploma   program   in   culinary   and catering   management,   and   then   continued   with developing the bachelor program [14].

Gastronomy tourism in Malaysia

Malaysia   is   also   becoming   one   of   the popular tourist destination in South East Asia. Tourism industry in Malaysia has become a major economic contributor. In 2002, a report released by The World Tourism Organization (WTO) stated that Malaysian tourist arrivals had grown at a rate double the world average between 1995 and 2002   [1].   Generally,   Malaysia   has   some similarities   with   the   other   South   East   Asia countries,   except   Indonesia.   Malaysia   has limitation in area, natural resources, and other influencial factors in tourism. But in other side, Malaysia realized that there are still many advantages that can be used as the pull factors for tourists to visit Malaysia. With their slogan "Malaysia: Truly Asia", Malaysia has tried to explore their rich in culinary culture to support tourism   sector   development.   Malaysian gastronomy   aspects   are   the   products   of acculturation and assimilation among the various race particularly Malays, Chinese, Indian, and also other ethnic groups [15]. This condition has made the uniqueness and diversity in Malaysia local   food   and   beverages   and   created   a Malaysian cultural and gastronomical heritages. There is also a spesific ethnic-group in Malaysia called *Mamak* (Indian Moslem) whose popular food-preparation and cooking style, and has created the inter-racial dining like *mee goreng mamak, pasembor, curries, roti canai, murtabak, sarmosa, lassi, teh tarik,* and many more [15,16].

There are also several research conducted by Malaysian researchers about how to boost Malaysian Tourism through Malaysian gastronomy. In 2012, Zakariah *et al* had conducted a comparative study on Hongkong and Singapore tourism and tried to conclude some strategic implication to Malaysia's government policy. The other study was about international tourists's perspective of Malaysian gastronomic products [15,17]. Those research's aims were to investigate the foreign (western) tourists's perception of Malaysian food, beverages, and food culture, even their level of satisfaction on Malaysian food and tourism service, supported with some statistical analysis tools; and also to highlight several important points that should be noted and addresed to the government authorities. A research about culinary art education by Zakaria *et al* discussed the importance of culinary art education to provide professional human resources in culinary [7]. Culinary education provider such as institutes, colleges, universities, small catering school, even secondary schools are potential partners for government in supporting the culinary tourism development in Malaysia.Through those institutions, Malaysian youths are encouraged to participate in exploring and developing local food and beverages intensively. For boosting the Malaysian gastronomy products internationally, the Malaysian Tourism Board also organize some cooking tours and promotions abroad through food ambassador, in collaboration with professional chefs. Another idea of the government on promoting Malaysian gastronomy is introducing and distributing the *halal* products internationally [15].

Gastronomy tourism in Thailand

It is nearly similar to Malaysia whose gastronomical characters are accumulated from several ethnics (Malay, China and Indian), Thailand's gastronomy profile is also an accumulation and assimilation from Chinese and Moslem culinary athmosphere. Although there were some influences from other culture, Thai cuisines have their own images and strong characters that are quite different from other countries. One of its famous cuisine is Thailand classical soup called *tom yam* [1]. People around the world have know it well as traditional cuisine from Thailand with unique taste and ingredients. Thailand gastronomic tourism involves culinary heritages base comes from the long history of Thai culinary heritages resources. A research on

gastronomic tourism in Ayutthaya, Thailand, discovered that the most popular menus of Thai cuisines among Thai and foreign tourists are *kouy tiew rue* (Thai noodle soup with vegetable and meat), *kung-mae-naam-poo* (charcoal grilled river prawn), and *roti-saai-mai,* a Thai-Moslem dessert in the form of candy floss wrapped with bread flour [18]. Ayutthaya is now become one of food tourism destinations in Thailand, it has some food related events and also a unique attraction like Thai restaurants in the river markets. Tourism Authority of Thailand (TAT) have implemented many efforts in setting-up Thailand gastronomy, e.g. running a collaborative project with some culinary institutes, exploring and developing some innovative attraction like river market, and attempt to combine food, local souvenirs and cultures into a potential tourism experience for visitors. Potential of gastronomy tourism in Ayutthaya niche market has the strength point to the authentic multicultural products in the sense of cuisine [18].

How about gastronomy potency in Indonesia?

Compared with four countries above, actually Indonesia has more complete assets and advantages in culinary tourism. Indonesia has a wide area, high biodiversity, huge diversity in ethnics and tribes, various culture and tradition, and absolutely a wide spectrum of traditional cuisines. Indonesian traditional culinary is not only vary in every tribe and region, it was also categorized as *dangerously delicious* [19]. Besides, most of Indonesian traditional cuisines have the acceptable taste so they have the possibility to be loved by many people and society, including foreign tourists. The other advantage is that Indonesia is also popular for its natural and cultural tourism destination, so it always has a great amount of tourists visitation every year. By having 247 tribes, Indonesia has a ecoculinary potential to boost the tourism development [20], especially if every tribe and its cultural attribute are managed and developed seriously. Culinary tourism in Indonesia could be an integrated package with any attraction possesed by every tribe. Resumed from the description in this paper, this following table shows that essentially Indonesia has more potential chance and opportunities to develop culinary tourism (Table 1):

Table 1. Comparison of supporting factors in each countries

No.	Factors	HK	Sing	Mal	Thai	Ind
1.	Natural resources	*	*	*	*	**
2.	Human resources	*	*	*	*	***
3.	Cultural resources	*	*	**	*	***
4.	Geographical position	*	*	*	*	**
5.	Tourism destination	*	*	*	*	***
6.	Culinary diversity	*	*	*	*	***
7.	Government support	***	**	**	**	**
8.	Research & development	**	*	*	*	*
9.	People's involvement	**	**	**	**	*

Bondan Winarno stated in his book, *100 Best Street Food of Indonesia*, actually there are not any Indonesian cuisine can be claimed or called as the truly Indonesian food because essentially Indonesian cuisines are consisted of a very huge diversity of cuisines from a great amount of tribes and region in Indonesia [19]. So it can be stated that Indonesian cuisines is a representation and reflection of various kinds of cuisines owned by each tribe or region. Every tribe has its own traditional cuisines, and they have various kind of cuisines with various ingredients, way of preparation and serving, and absolutely vary in culture and tradition. Indonesian traditional culinary character is not just provincial, but it can be called as *terroir* (has a local characteristic in every region). For example, in West Sumatera province we can find *sate Padang* with three kinds of versions whose their own diferrences in taste, preparation, serving, and cultural origin, i.e. *sate Padangpanjang, Pariaman,* and *Danguang-danguang* [19]. There are still many case like this in other regions in Indonesia; not only in food, but also in beverages and munchies (snacks).

In 2012, The Ministry of Tourism and Creative Economy encouraged 30 Traditional Indonesian Culinary Icon. This was an effort to register and record the wealth of Indonesian traditional culinary culture handed down through generations [20]. Through this program, it is hoped that Indonesian culinary can be identified, documented, and preserved so that the Indonesian youth will realize that they have to

pay attention for so many worthed heritages in culture and tradition. Culinary tourism can be used as one of the sectors in increasing the society prosperity through the provision of ingredients up to the serving process, and it also can create many opportunities for local people, like job vacancies, local economy rotation, economic activities, culinary business, and more supporting business related to culinary [20].

Plant natural resources becomes into something very important as the constituent of many elements of traditional Indonesian food. A high diversity of plant resources is also reflected in the diversity of plant species in the composition of Indonesian dishes. In many dishes even a lot of plants are the key species in the manufacture or preparation of the dish, and sometimes they can not be replaced by any other plant. The following table (Table 1) presents some Indonesian cuisines with the plant key species, with all the cuisines are taken from 30 Indonesia's tradisional culinary icon (IKTI) proposed by The Ministry of Tourism and Creative Economy:

Table 1 and Figure 1 shows that many plant species can not be substitute with other species because their important role as the ingredients of the dishes. Plants preservation in relation to archipelago culinary becomes something very crucial because it will influence the existence and sustainability of traditional Indonesian dish itself. This is compounded by the diversity of spices used, which along with other spices play an important role in shaping the flavor of a dish. Basically, the conservation of plant species is not only be applied just to the key species or main ingredients, but should be applied to the overall plant resources involved in the composition of traditional Indonesian dishes .

In relation to the principles of ecotourism focusing on eco-friendly values, involvement of local communities, and education aspects, ecotourism or culinary-based tourism is a package that can load these values. First, the eco-friendly value represented in species conservation (plants and animals) as the ingredients of the cuisines. Secondly, community involvement implemented in their participation in culinary-related activities and businesses as well as supporting business. Third, the educational aspects contained in the process of delivering information to visitors about Indonesian culinary knowledges, ranging from

Table 1 . Traditional Indonesian cuisines and the plant key species

No.	Cuisine	Plant as key species	Role of the key species
1.	Gudeg	Nangka (*Artocarpus integra* Merr.)	Main ingredient
2.	Rawon	Kluwek (*Pangium edule* Reinw.)	Spice; giving flavour and colour
3.	Rendang	Kelapa (*Cocos nucifera* L.)	Main ingredient in making the *santan*
4.	Lumpia Semarang	Rebung (*Bambusa* sp.)	*Rebung* is the young shoot of bamboo, one of main ingredient
5.	Nasi kuning/liwet	Padi (*Oryza sativa* L.)	Main ingredient
6.	Tahu telur	Kedelai (*Glycine max* (L.) Merr.)	Main ingredient in *tahu*
7.	Ayam goreng laos	Laos (*Alpinia galanga* (L.) Sw.)	Main spice
8.	Kolak pisang/ubi	Pisang (*Banana* sp.), kelapa (*Cocos nucifera* L.)*,* singkong (*Manihot utilissima* Pohl.)	Main ingredients
9.	Minuman kunyit asem	Kunyit (*Curcuma domestica* Vahl.)	Main ingredient
10.	Sate ayam Madura	Kacang tanah (*Arachis hypogaea* L.)	Main ingredient in making the sauce

the variety of the cuisiness, constituent materials, preparation method, manner of presentation, and also the introduction of Indonesian culture and traditions contained in Indonesian culinary heritages. With all of those bestows, Indonesia should be proud and realize that Indonesia's culinary can be explored, preserved and developed more intensive in order to be well-known all over the world. Not just being well-known, the development and introduction of Indonesian traditional cuisines with all the attributes will impacted on the conservation of Indonesia's culture and tradition related to Indonesia's culinary. This could be a good way in promoting Indonesia's culture and also an effort in conserving the worthed heritages of Indonesia. Indirectly, some effort in developing Indonesia's culinary will also boost the conservation on natural resources which is become the ingredients of the cuisines. In other words, developing Indonesia's traditional cuisines as an object of culinary or gastronomy tourism means that it will be give a promising impact in boosting the economic development, and also will be a good effort in conserving both the natural and cultural resources of Indonesia.
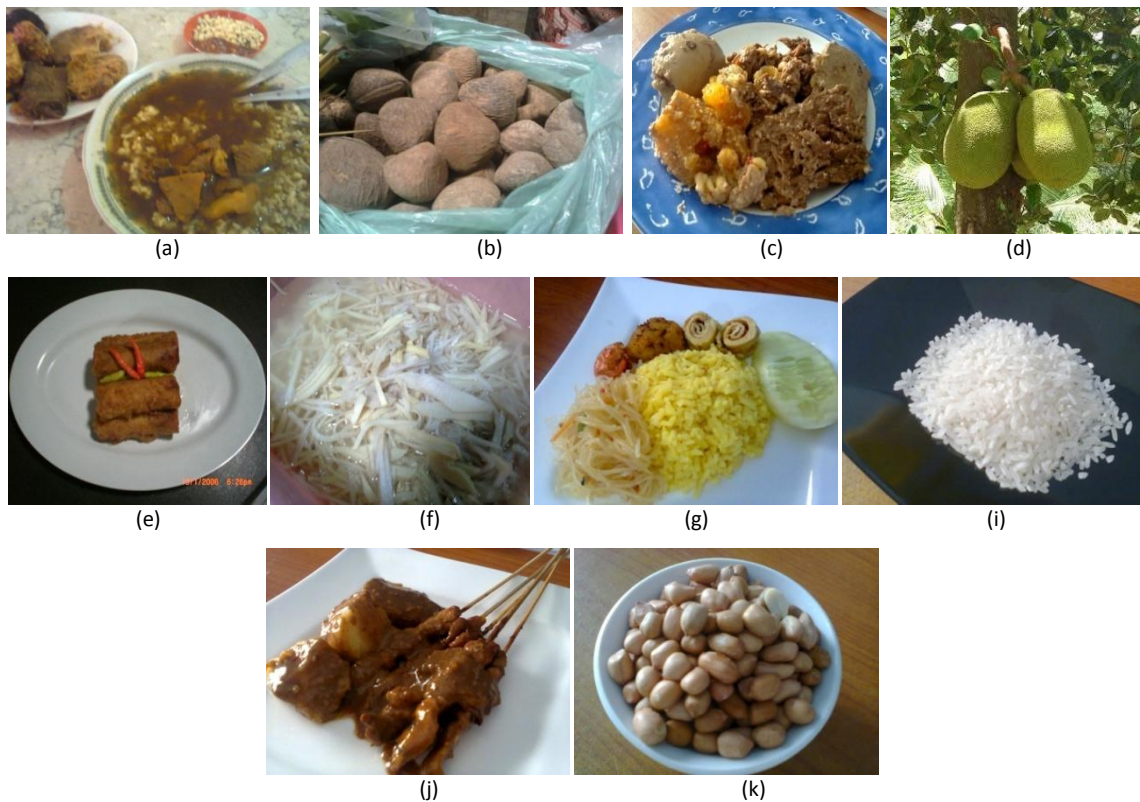
Figure 1. Traditional Indonesian cuisines and the plant key species: (a) Rawon, (b) *Pangium edule* Reinw., (c) Gudeg, (d) *Artocarpus integra* Merr., source: [8], (e) Lumpia Semarang, (f) young shoot of *Bambusa* sp., (g) Nasi Kuning, (h) *Oryza sativa* L., (i) Sate Ayam, (j) *Arachis hypogaea* L.

Conclusion

Gastronomy tourism, culinary tourism or food tourism is a form of tourism that is based on the strength owned by the culinary aspects of a country, region, or area. Gastronomy tourism is not only offer various types of dishes as an object of tourism attraction, but also includes a variety of food-related attributes ranging from constituent ingredients, preparation and processing method, manner of presentation, flavor aspects and nutritional contents, cultural values and traditions, as well as other information can be described by a type of dish.

Hong Kong, Singapore, Malaysia and Thailand are countries that have successfully explored and developed gastronomical aspects that becoming a great asset to support the tourism sector. Limitations of territory, natural resources, and other factors needed as the tourism capital has made gastronomy aspects of these countries becomes a potential option to support the advancement of tourism. Their governments successfully explore and develop the richness and uniqueness of their gastronomy character into a very good strength in attracting tourists visit. Many research were also conducted in those countries in order to study the potential efforts that may contribute the development in tourism. This awareness makes their tourism sector into an asset that enhanced the progress of the economy development.

Basically, Indonesia as a country with a large area, high biodiversity, various cultural traditions, has the greater opportunities and potential than those countries in developing the tourism. Indonesia's gastronomy with all its diversity and uniqueness is one of the potential tourist attraction that can support the tourism sector. Traditional cuisines with all its attributes are potential in supporting the development of tourism in a country, as far as the support of all the relevant sectors ranging from communities, the government, private agencies, institutions, and stakeholders. Through gastronomy tourism it can be expected a tourism activity that not only satisfy travelers in terms of food or drink, but also educate the tourists to be more responsive to the type of tourist attractions which are environmentally friendly, involving local communities, as well as having educational value. Gastronomy tourism can also be created into a form of ecotourism that can play a major role in the conservation of natural and cultural resources.

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Spatial Diversity in Composition and Structure of Nekton in Ngenep Spring and its Channels, Karangploso - Malang

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Abstract

Water springs and its channel degradation due to anthropogenic pollution may alter the community structure of aquatic organisms. Water spring degradation therefore affect the quality of water as tourism resources. This study aims to investigate the changes in community structure of nekton and determine the relationships between water quality characteristics to the diversity of nekton. The field survey was set up in Ngenep spring and its channels. Results showed that nekton species found in Ngenep spring and its channels consists of 4 classes, 4 orders, 6 families, and 7 species with total 627 nekton samples. It is comprises of fishes, shrimp, frogs and waterstriders. Nekton diversity index (H') in the spring and irrigation channel were in moderate level (1<H'<3) while in settlement channel was low (0,67). Evenness values of nekton ranged 0,24 – 0,53, whereas dominancy index of nekton ranged 0,41 – 0,74. Evenness value in settlement channel was very low (0, 24) with high dominancy index (0, 74); it indicates that nekton species were spread not evenly in the channel, it dominated by *Rasbora* sp. fish (highest IVI: 184,95). There were spatial variations of physico-chemical water quality parameters in Ngenep springs and its channels (temperature, stream velocity, turbidity, conductivity, pH, DO, BOD and TOM) which affected the nekton diversity and community structure. Clustering analyses and PCA result shows correlation pattern between nekton distribution with physico-chemical water quality parameters. However, physico-chemical water quality parameters in Ngenep springs and its channel were still optimum as nekton habitat (PP No. 82/ 2001).

Keywords: Community structure, Nekton, Spatial diversity, Spring, Water channel

INTRODUCTION

Springs are one of water sources that has an important role for various life purposes. Water springs not only used for daily life needs mainly by the surrounding communities, but also used as water source for agriculture irrigation, and tourism attractions. Malang Regency has been knowna as one of the nature based tourism destination, and water-based tourism recently grows significantly. Water springs is one of the crucial tourism resources, but many water springs in Malang experienced some decline, both in its quantity and quality [1].

There are several reasons for water spring degradation, namely due to many land use conversion from forest to agriculture particularly in the hilly areas and land uses changes, sewage, forest degradation and pollutions. Anthropogenic activities such as settlements, agriculture practices, fishing, any households and other human-induced problems surround the spring and its channel also directly and indirectly may polluted the waters, which in turn lead to the degradation of the spring and its channels. Water spring quality degradation due to pollution resulted form anthropogenic activities may alter the composition and community structure of aquatic organisms [2].

Recently, bioindicator widely used to determine the aquatic ecosystem health. Among bioindicator taxa, necton widely used due to its ability to provide aquatic health status [3]. Nekton generally refers to free-swimming aquatic organisms including fish, amphibians, crustaceans, large aquatic insects and other macroinvertebrate groups [4]. Nekton has the ability to move and migrates at many spatial and temporal levels. Nekton also corresponds to ecosystem changes resulting from anthropogenic impacts so that it can be used as bio-indicator of aquatic health [5]. Nekton species diversity in the waters may provide an overview of the complex nekton communities in the waters.

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Two aspects should be noted in aquatic ecosystems are aquatic living organisms and ecological processes. There are interconnections between the organisms and its environment as an ecological process that cannot be separated in the communities [6]. The community structure concept is very relevant applied to analyze the aquatic environment, because the composition and structure of a community is a good indicator to show where the community is located. Therefore, researches on habitat and comunity structure of nekton needed to conduct as a method to know the impact of changing water quality to the existence of nekton in water springs and its channel.

Ngenep spring is utilized by local surrounding communities for various purposes as water sources of drinking water, any households and sanitation, irrigation for many crops, also as tourism attraction (i.e. fishing and swimming). Human activities around the spring and its channels may give impacts to nekton diversity and its water quality. This study was conducted to investigate the spatial diversity changes in structure and composition; relative abundance and frequency; diversity, similarity and dominancy indices of nekton in Ngenep spring and its channels due to anthropogenic activities, also to determine the relationships between its physico-chemical water quality characteristics to nekton diversity.

Results of this study provide ecological database of nekton diversity corresponds to ecosystem changes resulting from anthropogenic impacts in Ngenep spring and its channels, which may become basis for recommendations for the conservation of the spring, water managements and surrounding land-use in those area.

MATERIAL AND METHODS

Study Sites

Study area is located at Ngenep spring and its channels in Ngenep village, Karangploso district, Malang Regency. Malang regency is an area located in the South Central part of the East Java Province, coordinates position at 7° 44' to 8° 26' South Latitude and 112° 17' to 122° 57' East Longitude, with area covers of 3,237.26 km^2. Malang regency topography is a plateau area surrounded by several mountains and plains at an altitude of 250-500 m above sea level (asl). Karangploso district is one of 33 districts in Malang regency, located in the Northern part of Malang, impassable the main road which connects Surabaya and Batu, with total area covers 6,235 km^2. Ngenep village where the spring lies is one of 9 villages at Karangploso district with area covers 1,392 km^2 consists of 9 subdistricts and 90 householders [7].

This study was conducted in November 2013. Nekton sampling sites were set out into 3 stations; 1 station at the spring and 2 stations along the channels based on the anthropogenic activities, i.e. irrigation channel (1) and settlement channel (2) with 3 sampling points per station using systematic random sampling (Figure 1).

Figure 1. Nekton sampling location map (Note: channel 1= irrigation, channel 2= settlement; *source: google earth, 2003*).

Nekton Sampling

Visual concentration method were used to observe nekton diversity with quadrat plot sized 1m x 1m. Nektons present in the quadrat plots were recorded its type and amount then documented or photographed. Nekton samplings also conducted using nets with minimum mesh size of ± 1.5 to 2.0 mm. Nekton samples obtained put in labeled bottles and preserved with alcohol 70% [8]. Data obtained were then identified by its morphological characteristics from literatures and analyzed in Laboratory of Ecology and Animal Diversity, Department of Biology, Faculty of Mathematics and Natural Sciences, University of Brawijaya, Malang.

Water Quality

The spring and its channels were measured its dimensions including width (cm) and depth (cm). Water physico-chemical parameters were measured at sites and in laboratory by taking water samples per stations. Parameters observed

including flow rates (only for channels), water temperature, *secchi* depth, turbidity, conductivity, pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD) and Total Organic Matter (TOM).

Statistical Analysis

Data analysis for nekton diversity including nekton species composition and structure, relative abundance and frequency, importance value index, diversity, evenness and dominancy indices using Microsoft Excell 2007. Multivariate analysis of cluster and biplot (Bray Curtis) and principal component analysis were done using PAST software. Principal component analysis (PCA) results give information about the relationship between the abundance of nekton with water physico-chemical parameters, where the nekton abundance as row variables and waters physico-chemical parameters as quantitative variables (column) [9].

RESULTS AND DISCUSSIONS

Stations profiles and environmental conditions

Nekton obervations were conducted at three stations (Figure 1):

a. Station 1 – Ngenep spring

Station 1 is located in upstream area of Ngenep spring with coordinates position at (07° 53'55.9" SL) and (112°36'77.75" EA), latitude 536 m a.s.l. (Figure 1, Figure 2-a). Waters in the spring in clear conditions dominated by rocks, sands and plant litters substrates and quiet-slow flowing stream. Some of riparian trees arround the spring including *Syzigium pycnanthum*, *Syzigium cumini*, *Ficus benyamina*, *Ficus* sp., *etc*. Spring location is far from local settlements about ± 1 km.

b. Station 2 – Irrigation channels

Station 2 is located on channel of Ngenep spring use as irrigation of agricultural crops (rice/paddy and watercress) with coordinates posisiton at (07°53'55.9'' SL) and (112°37'24 .0"EA), latitude 532 m a.s.l. (Figure 1, Figure 2-b). This station is divided into 3 sub-stations, with a plot size of ± 1 m, spacing between plots is ± 3m. In sub stations 1 and 2 are located in the area of irrigated rice farm, while the sub-station 3 is located in watercress farm. Water conditions in the third sub-station is very clear, with muddy and sandy base subtsrates, shallow depth, fast-flowing medium (0.26 m/sec).

c. Station 3

Station 3 is located in channel close to settlement area with coordinates position at

(07°54'00.2" SL) and (112°37'27.3" EA), latitude 536 m. a.s.l. (Figure 1, Figure 2-c-d). The channel has rapid flow (0.15 m/sec), sandy and grassy base substrate. Residential distance to the station 3 is about ± 20 m, where there is a landfill located near station 3 so that many households waste scattered along the channel.

Physico-chemical water quality profile

Water quality measurements conducted prior to nekton samplings aim to investigate and determine the impact of changing water quality on nekton community structures in Ngenep spring and its channels. Profile of physico-chemical water quality results shown in Table 1.

Physical water quality

Water temperature at three stations ranged between 20-21 °C (Table 1). However the temperature of those three stations still suitable for aquatic organisms including nekton. Optimum temperature for aquatic organisms ranges 20-30 °C [10]. The temperature variation were caused by the difference of time sampling and effect of the vegetation thickness around the waters allegedly blocking incoming sunlight penetration into the water.

Figure 2. Nekton sampling locations: (a) Ngenep spring, (b) settlement station, (c) irrigation channel watercress farm and (d) irrigation channel-ricefield.

Stream velocity in both channels ranged 5-8 sec/m (Table 1), defined as fast-flowing water stream. Stream velocity values were effected by the topography slopes from the spring toward its channels and type of substrates at base of the channels.

Secchi depth at all stations can penetrate until the base of the waters due to clear waters and shallow depth (30-50 cm). *Secchi* depth is related

to turbidity level, turbidity in the spring is the lowest while the in irrigation channel is the highest about 7,70 NTU (Table 1). It is because in irrigation channel contains of many organic materials and mud substrates at base.

Conductivity indicates the ability of waters to conduct electricity depend on the concentration of ions and water temperature. Result showed that conductivity at all stations were in positive relation to the water temperature with their respective values >100 µs/cm, where the standard conductivity value range of 100-500 µs/cm [10].

Table 1. Profile of physico-chemical water quality in Ngenep spring and its channels.

Parameter	Ngenep Spring	Irrigation channel	Settlement channel
Physical			
Temperature (°C)	21,23 ± 0,23	20,47 ± 0,25	20,87± 0,51
Stream velocity(s/m)	0,00 ± 0,00	8,89 ± 3,91	5,11 ± 0,84
Turbidity (NTU)	0,54 ± 0,10	7,70 ± 0,16	0,83 ± 0,06
Conductivity (µs/cm)	104,6 ± 1,97	102,7 ± 0,00	104,2 ± 0,1
Chemical			
pH	6,01 ± 0,02	6,42 ± 0,04	6,14 ± 0,07
DO (mg/l)	4,35 ± 0,48	6,71 ± 0,06	5,48 ± 0,24
BOD (mg/l)	8,67	22,00	22,00
TOM (mg/l)	202,4 ± 27,91	275,03 ± 14,73	218,25 ± 116,01

Chemical water quality

pH value of the water is influenced by biological activity, temperature, oxygen content and the presence of water ions. Changes in pH value in the water shows the change of biological process and the supply of nutrients in the water. pH value in Ngenep springs tend to be neutral with value 6,01 ± 0,02, which it is good for fishing. Some aquatic biota are sensitive to pH changes and suitable with pH around 6.0 to 8.5 [11].

Dissolved oxygen (DO) is concentration of oxygen dissolved in the water. Oxygen is main components for respiration and metabolism of fish and other organisms resulted from phytoplankton and water-plants photosynthesis and air diffusion [12]. DO level in Ngenep springs and its channel at all stations ranged from 4.35 to 6.71 mg/l. Optimum DO level for fish growth was

above 5 mg/l [13]. Spring station has the lowest DO level because the waters at spring are not or slow-flowing stream.

Biochemical oxygen demand (BOD) is the levels of organic matter, which is amount of oxygen needed by aerobic microbes to oxidize organic matter into carbon dioxide and water [10]. Result showed that BOD at all stations ranged from 8.67 to 22.00 mg/l. BOD level of 5 mg/l in slow-flowing stream will cause poor water environment, but BOD level of 30 mg/l in fast-flowing stream has not cause any nuisance yet [14]. BOD level in both channels were high about 22.00 mg/l.

TOM (Total Organic Matter), is the total value of the carbon produced from the respiration of aquatic organisms. The organisms included nekton, benthos, plankton and plants. Result showed that irrigation channel has the highest level of 275.03 mg/l. This is due to the influence of organic material inputs to the channels agricultural waste, leaf litters and wood debris. TOM level considered normal ranged from 100-300 mg/l [14].

Identification and composition of Nekton

Nekton species found in Ngenep spring and its channels (irrigation and settlement channels) consists of 4 classes, 6 families, and 7 spesies with total 627 nekton samples. It is comprises of fishes, shrimp, frogs and waterstriders. Fishes consists of 2 order *i.e.* Cypriniformes (1 family, 2 species) and Cyprinodontiformes (1 family, 1 species); shrimp consist 1 order *i.e.* Decapoda (1 family, 1 species); waterstrider consist of 1 order *i.e*. Gerridae (1 family, 1 species); and frogs consist of 1 order *i.e.* Anura (2 family, 2 species) (Table 2.).

Morphological characteristics of 3 fish species: Wader Bintik Dua (*Puntius* sp.), sized small to medium, generally 100 mm in length, green to grey body colour, darker on dorsal and lighter in ventral. There are two dots at dorsal fin and middle of tail base (Figure 3-a). Wader Pari (*Rasbora* sp.) has slender body sized 70 mm at maximum, brown-yellow colour at dorsal and whitish at ventral. There are golden line inside and black line outside body in both side from gills to tail. (Figure 3-b). Cemplon/Gathul (*Poecilia* sp.), sized 40-60 mm, male sized smaller 20–40 mm. Male *Poecilia* sp. has colourfull and bright scales males, some splashes, spots, or stripes in both sides body (Figure 3-c).

Table 2. Nekton species found in Ngenep spring and its channels.

Local name	Species	Family	Ordo	Class
Ikan Wader Bintik Dua	*Puntius* sp.	Cyprinidae	Cypriniformes	Actinopterygii
Ikan Wader Pari	*Rasbora* sp.	Cyprinidae	Cypriniformes	Actinopterygii
Ikan Cemplon/Gathul	*Poecilia* sp.	Poeciliidae	Cyprinodontiformes	Actinopterygii
Udang Air Tawar	*Macrobrachium* sp.	Palaemonidae	Decapoda	Malacostraca
Water Strider	*Limnometra* sp.	Gerridae	Hemiptera	Insecta
Katak coklat	*Bufo* sp.	Bufonidae	Anura	Amphibia
Katak hijau muda	*Rana* sp.	Ranidae	Anura	Amphibia

Fresh water shrimp from genus Macrobrachium were found, it characterized by extrem swollen of its second pereiopods (Figure 3-d). Amphibians found from genus Rana and Bufo. Adult body of *Rana* sp. and *Bufo* sp. were eaasily distinguisheded by its shape and skin colour. Bufo has rounded body while Rana has slender body. Bufo skin is rough and dry with many pustules in brown colour, while Rana skin is smooth and wet, in bright colour due to chromatofor of black and brown also lipo which contain red, orange and yello colour (Figure 3-e-f) [15].

Figure 3. Nekton species found in Ngenep spring and its channels: (a) *Puntius* sp, (b) Rasbora sp., (c) *Poecilia* sp., (d) *Macrobrachium* sp., (e) *Rana* sp. (source: alcander-clifford.blogspot.com) and (f) *Bufo* sp.

Waterstrider (*Limnometra* sp.), is a true bug in the order Hemiptera, familiy Gerridae which distinguish themselves by having the ability to walk on water. They live on water surface either in stagnant waters or lentic areas of running waters. They usually large size in orange or red, black and yellow colour [16].

Relative abundance, relative frequency and importance value index of nekton

Importance value index obtained from the sum of relative abundance and relative frequency). Nekton with high value indicated its significance position within ecological community. Fish species *Rasbora* sp. has the highest IVI, followed by *Puntius* sp. and *Poecilia* sp. (Figure 4).

Relative abundance and frequency associated with distribution area or spreading of particular species. Results showed that *Puntius* sp. and *Macrobrachium* sp. only found in Ngenep spring, while amphibians *Rana* sp. and *Bufo* sp. only found in irrigation channel. *Limnometra* sp. found in both channels. It may indicated its spesific habitat and related to feedings abundance. In nature, fishes Cypirinidae family found in freshwater ranging from near shore to hilly areas 2,000 m asl. The fish is omnivorous; it feeds plankton, fito-plankton, insect larvae also plants. It is often found collaborated with other fish species in shallow ponds, spring, lakes and its channels, small to large rivers [16].

Diversity, evenness and dominancy indices of Nekton

Diversity index (H') nekton in Ngenep spring and its channels ranged from 0.67 to 1.49 (Fig. 4). Nekton diversity in irrigation channels and spring were in moderate level (1<H'<3) while in settlement channel was low [9]. Evennes values of nekton ranged 0,24 – 0,53, whereas dominancy index of nekton ranged 0,41–0,74. Evenness values have negative relation to dominancy index. Evennes values in settlement channel were very low (0, 24) and high dominancy index (0,74) (Fig. 5); it indicates that nekton species were spread not evenly, there are some individuals which dominated and found only in specific sations [4]. Diversity indices indicated that there are some nekton species which well adapt and breed in the spring habitat conditions and agricultural channels. In nature, fish species have a close relationship with habitat, physico-chemical water quality, changes of environmental quality, availability of feedings, feedings competitor, predators [17].
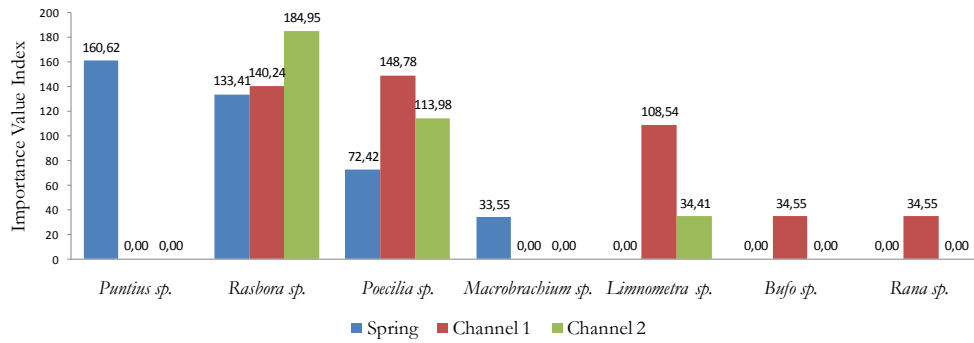
Figure 4. Bar chart importance value index (IVI) of nekton in Ngenep spring and its channels (Note: channel 1= irrigation, channel 2= settlement)

Diversity indices values also influenced by the level of ecological pressure to the ecosystem of spring and its channels, for example as a result of human activities such as agricultures and dense settlements and other activities around the waters may caused degradation to the nekton diversity. Results showed that nekton diversity indices in settlement channel were the lowest and most degraded among other.
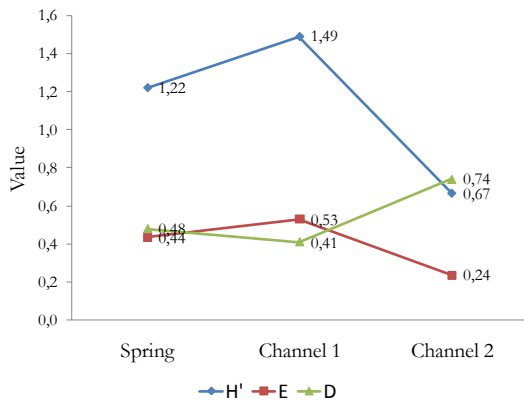

Figure 5. Line chart Diversity (H'), Evennes (E), and dominancy (D) indices of nekton in Ngenep spring and its channels (Note: channel 1= irrigation, channel 2= settlement)

Stations similarity cluster and PCA analysis based on physico-chemical water quality

Multivariate clustering based on its physico-chemical water quality of 3 stations were conducted using Bray-Curtis similarity index at 90% (high level similarity) [18], result shows that that the stations were clustered into two groups (Figure 6). Group 1 consists of settlement station (channel 2) and the spring. Water quality in both stations are in good quality with values of pH, temperature, turbidity, conductivity, DO and BOD are not much different (Table 1, Figure 6). Similarity of the two stations is presumably because the location is quite near to each other, channel 2 is located ± 300 m from the spring.

Irrigation channel (alone) clustered in group 2. Waters in irrigation channel used for agricultural activities including rice and watercress. The presence of watercress indicate that the water is in good quality since watercress is sensitive plant to water quality changes, it grows optimum in good quality water. Physico-chemicals water quality parameter in irrigation channel differs from group 1 in stream velocity (fast-flowing), colder temperatures, higher level of DO, BOD and TOM (Table 1, Figure 6). It is allegedly due to many organic and anorganic materials produced by the crops.

Stations similarity cluster and PCA analysis based on nekton abundance

The degree of similarity between stations can also be viewed by biological parameters using Bray-Curtis index. Dendrogram (similarity index level at 80%) between the stations based on the abundance of nekton shows that it clustered into 3 groups respectively (Figure 7). It can be interpreted that each station has its typical of nekton abundance correspond to its habitat conditions.

Typical nekton abundance in spring station were *Puntius* sp. and *Macrobrachium* sp. Irrigation channel is characterized by the abundance of *Poecilia* sp., *Lymnometra* sp., *Rana* sp. and *Bufo* sp.; whereas in settlement channel characterized by the abundance of *Rasbora* sp. Irrigation channel and settlement channel have similarity of nekton abundance about 55%, some nekton species were found in both channels (Figure 7).

PCA analysis correlation: nekton abundance and water physico-chemical parameter

PCA result in Figure 8 shows the correlation between nekton abundance with water physico-chemical parameters in Ngenep spring and its channel.
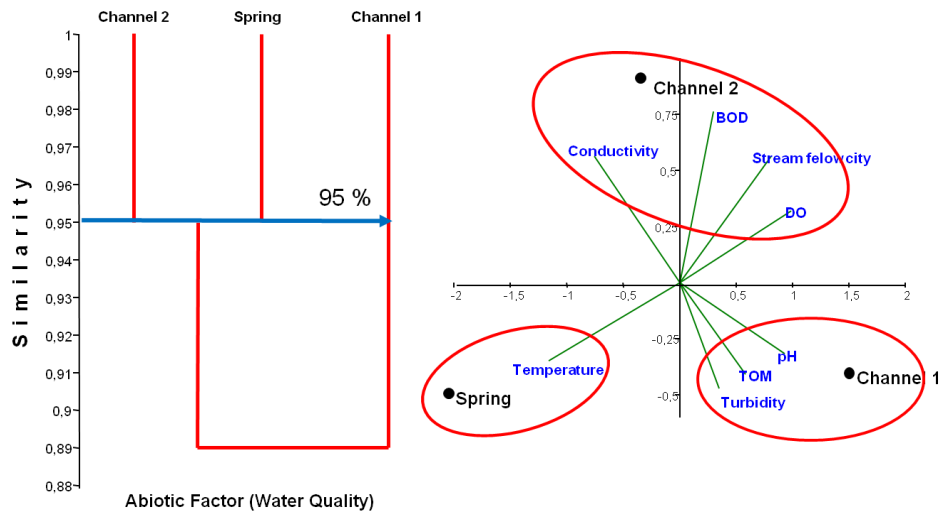
Figure 6 . Dendogram stations similarity cluster and PCA analysis based on physico-chemical water quality (Note: channel 1= irrigation, channel 2= settlement)
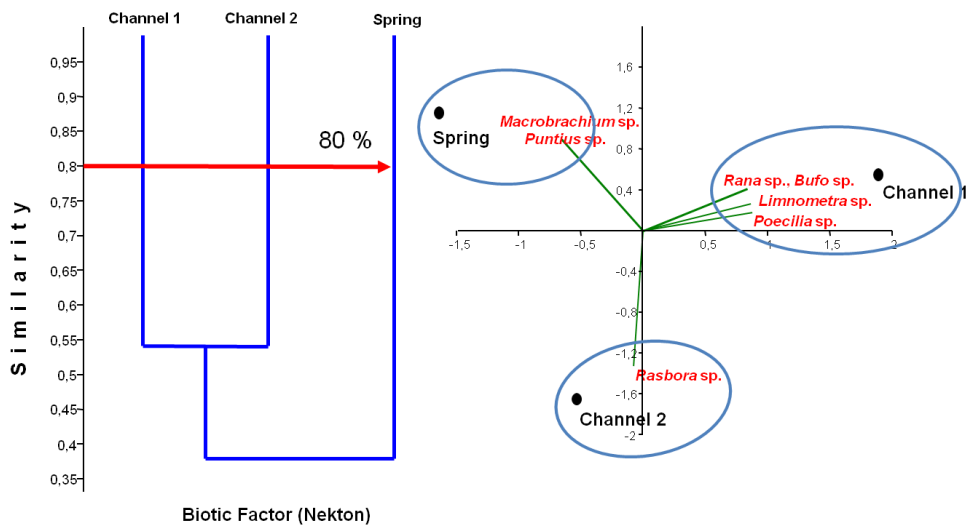

Figure 7. Dendogram stations similarity cluster and PCA analysis based on nekton abundance Note: channel 1= irrigation, channel 2= settlement)
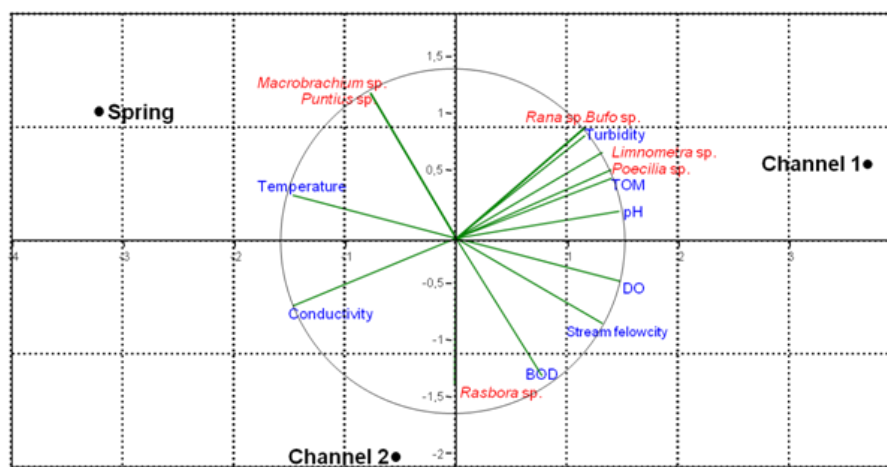

Figure 8. Principal Component Analysis Graphic correlation between nekton abundance and water physico-chemical parameter (Note: channel 1= irrigation, channel 2= settlement)

The closer angle between variables in the circle means greater role of the variable affect the other. Nekton distribution at spring station characterized by the presence of *Puntius* sp. and *Macrobrachium* sp. which affected by temperature. Settlement channel dominated by the presence of *Rasbora* sp. which affected by interactions of conductivity and BOD. Whereas in irrigation channel (channel 1) characterized by *Rana* sp., *Bufo* sp*., Limnometra* sp. and *Poecilia* sp., with affecting variables including turbidity, TOM, pH, DO and stream velocity.

Physico-chemical water quality parameters in Ngenep springs and its channel is still optimum as nekton habitat according to PP No. 82 of 2001 on standard water quality for fisheries. Spatial variation on physico-chemical parameters greatly affected nekton community structure in Ngenep springs and its channel.

CONCLUSION

Human activities around the spring and its channels indeed gave impacts to nekton diversity and its water quality. Nekton species found in Ngenep spring and its channels (irrigation and settlement channels) consists of 4 classes, 4 orders, 6 families, and 7 spesies with total 627 nekton samples comprises of fishes, shrimp, frogs and waterstriders. Nekton diversity were in moderate level while in settlement channel was low. Anthropogenic activities in Ngenep springs and its channels caused variation of physico-chemical water quality parameters which affected nekton diversity and community structure. However, physico-chemical water quality in Ngenep springs and its channel were still optimum as nekton habitat.

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Policy Change Implication Toward Integrated Wonorejo Zone As a Strategic Economic Development Zone

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Abstract

Integrated Wonorejo Zone is one of the development zone in Lumajang Regency with significant goals to improve potensial condition in three aspect namely tourism, agriculture and SMEs. Based on RTRW in 2008-2028, which was established in 2008, the development strategy of this zone is change. Integrated Wonorejo Zone was mentioned as a Strategic Economic Development Zone. This research describe and analyse about how the implication of policy change toward Integrated Wonorejo Zone. This research using method of descriptive research with qualitative approach as well as analysis of data by John Seidel about QDA (qualitative data analysis). The result of this research explain that the policy change implication, from description, implementation and implication point of view did not give significant expectation.

Key Words: Policy Change, Integrated Wonorejo Zone, Strategic Economic Development Zone.

INTRODUCTION

In the beginning, Integrated Wonorejo Zone in Lumajang Regency has goals as realization of *Tri Program plus.* It consists of agriculture, tourism, and small and medium enterprises. *Tri Program Plus* itself become one of the Lumajang Regency Action Program at the time and gain full support from local council to create and realize people dreams. Lumajang Regency introduced Wonorejo as a banana city (*Kota Pisang*) and change become pouch city (*Kota Kantong*). But in recent days, concept of Integrated Wonorejo Zone development is change. Those change included in RTRW (Spatial Planning) of Lumajang Regency in 2008-2028 [1]. Local government of Lumajang Regency arrange Integrated Wonorejo Zone as Strategic Economic Development Zone. Plan of strategic area in Integrated Wonorejo Zone directed to economic, social, culture and strategic development zone for environmental support. Change condition of Integrated Wonorejo Zone described from differentiation of facilities in each development period [2]. First period is explain the first plan of Integrated Wonorejo Zone Development and second period is a condition of Integrated Wonorejo Zone after RTRW 2008-2028 Lumajang Regency [1] executed.

Integrated Wonorejo Zone in first period established agriculture agency office besides agriculture training and education, to improve professionalism in the field of agriculture [2]. First period also develop Green House as a research site, to produce a variety of ornamental plants and other rare plants. Agro stand was also developed as a place of exhibition and sale of primary agriculture commodities from Lumajang Regency. Rest area built as a resting zone for visitors and at the same time for the convenience of travelers. Warehouse rabate become a market that sale all product, especially local product of Lumajang Regency. At the time, restaurant provide very satisfying food menu for customers. Central of Social Information Office provides information about Lumajang on education, health, agriculture, industry and business opportunities. Play Ground Area is a childrens game zone that combine technology and traditional concept, besides safe and comfortable. Consist of waterpark, bumper car and mono rail trains. The last for first period is Place of Worship, as prayer room for moslem visitors.

Facilities in second period of Integrated Wonorejo Zone different than former condition. Consist of water park, as a spatial form of pool and kids games. This place has been develop since the Integrated Wonorejo Zone were established. Circuit of motor cross, as a land that used for racing motor cross. Historically, this place was an agriculture training office. Outbond Arena is a place that utilize all building facilities around Integrated Wonorejo Zone. Central of handicraft become stores that sell original products of Lumajang. The last is Bird Competition Arena for bird competition event that held by Tourism Art and Culture office. The

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venues and zones utilize several part of Integrated Wonorejo Zone.

Policy change of development include in the process of development. But in fact, due to policy changes often afflict on the interests of important group in society or the self-interests of the public officials who must adopt them, many development analysis have been pessimistic about the possibilities for policy reform [3]. The goal is to analyze the policy change implication toward Integrated Wonorejo Zone as a strategic economic development zone.

Objectives of this research is to describe and analyze policy change implication toward Integrated Wonorejo Zone, describe and analyze consideration in changing the policy. We also describe and analyze the inovation which made to develop Integrated Wonorejo Zone as a strategic economic development zone in Lumajang Regency.

MATERIAL AND METHODS

Field data was generated through structured interview. Informant of this study encompasses persons who are related to the political changes, namely staffs of Promotion, staff of Tourism Attraction and Destination, Head of Statistic Division Department of Agriculture, and staff at Infrastructure Development BAPPEDA (Regional Development Agency).

Documentation

The data consisted of guide book of Integrated Wonorejo Zone Development, basic data of Tourism, Art and Culture office, RTRW 2008-2028 of Lumajang Regency [1], Regent Decision about team management of Integrated Wonorejo Zone [4].

Observation

We observed the condition on research site, and all place in Integrated Wonorejo Zone. All facilities, institution become supporting data for analysis.

Data Analysis

This research use Qualitative Data Analysis (QDA) from Seidel [5] (Fig. 1).

Notice Things

The notice things phase has been done to notice, write field data, interview the informant, gather the data and collect the data from Department of Agriculture (coordinator) and Bappeda as advisor of zone management. We

make a note about historical description and performance of Integrated Wonorejo Zone in first period and gathering data about history, performance and description of Integrated Wonorejo Zone in second period. We classified the basic data and correlated it to the focus of research.
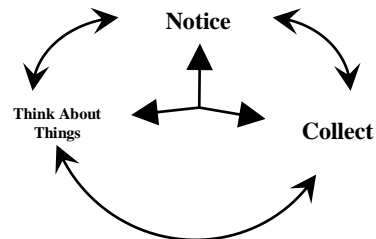

Figure 1. Model of Qualitative Data Analysis [5]

Collect Things

This phase collects and sorts the data of performance, consideration in changes of Integrated Wonorejo Zone in first and second period, the legal basis of zone development, as well as executed inovation.

Thinking about Things

The thinking process examines the data which have collected. We build some type of sense out of each collection especially which can be proved. Second, we assess the relationship of information from BAPPEDA, Department of Agriculture, and Tourism, Art and Culture Office. This study discovers the phenomena with general description on performance, inovation and consideration in changes from informant, document and field observation.

RESULTS & DISCUSSIONS
First and Second Period Condition

Condition of Integrated Wonorejo Zone in first and second period looks indifferent. According to Cristaller [6] on central place theory, the concept of integrated wonorejo zone in first periode becomes the center of place to provide goods and services to recidents of the surrounding area. The facilities include the public service, education and training, research, information and integrated economy, which is the implementation of Tri Program Plus of Lumajang. The facilities consist of several Integrated Wonorejo Zone fields such as agriculture, SME, tourism, transportation and other supporting facilities. Agriculture sector consists of the Department of agriculture, agro-tourism, green house, agro stand, and agro tourism education and training. Small and Medium Entreprises

(SME) consist of warehouses rebate, rest zone and restaurant. Whereas tourism sector consists of information centre and children's play ground, and the sector of transportation provides a bus terminal. Last are the supporting facilities, i.e. mosque, open stage, clean water, electricity, phone outlets and 24-hour security system.

Accordance to central place theory by Cristaller, this zone is not appropriate to become central of public service, because in the first concept of this area is to improve economic revenue of Lumajang Regency. Distance between the zone and central of bussines area of Lumajang Regency is too far. Considering the concept of Cristaller about range and treshold, decision from Lumajang Regency to establish this zone in Wonorejo District is bad. Recently, the condition of the zone is not maintained well due to seldom visitors.

Integrated Wonorejo Zone in second period is not different with previous period. But there are several function-changed facilities. However, there is also zone area which still continues to be developed. The basic law regarding management on Integrated Wonorejo Zone has been established through Regent of Lumajang Decision No. 188.45/372/427.12 on 2003 which regulate the establishment of management team for Integrated Wonorejo Zone [4]. In detail, the facilities in the Integrated Wonorejo Zone which is currently functioned are Water Park, Circuit of Motor Cross, Outbound Arena, Central of handy crafts and Bird competition arena. These existing facilities are plastered on the light billboard at the entrance of Integrated Wonorejo Zone.

Some facilities are changing due to unsustainable development. Another reason is due to lack of commitment from the leaders of the zone to the development.

Similar with the condition of the first period, and compare to the theory of central place by Cristaller [6], this zone is further from first period. Although the change is not significant, the change of zone concept is not logic. Cristaller stated that central place is a center of public service. Integrated Wonorejo Zone can be mentioned as central of public service, because many facilities and function of building is to serve people. But in fact, the condition is not sustainable because the zone has not considering several aspect of central place. Specification of central place acording Cristaller that the place must be considers the threshold [6]. It means that central place should serve all people that live there.

The Integrated Wonorejo Zone was established far (±5 km) from Central Bussines District (CBD) of Lumajang Regency. The impact is the government cannot achieve the concept to provide people needs on recreation. Cristaller theory of central place obviously explained that central place should provide all people's need that live there. Thus, its questioned which people were served if they live far from the zone.

Implementation

Implementation of Integrated Wonorejo Zone in first period is not going well like its original concept. It has been described previously that the implemenstation of Integrated Wonorejo Zone has been regulated in the Regent Decision on the establishment of management team. It explained that there are agency and the associated body that has the responsibility of the facilities in the zone.

Management of Integrated Wonorejo Zone in the first period was managed separately. Initial management was managed by government secretariat of Lumajang. Otherwise, area that has building which more emphasize to improve economic revenue of Lumajang was managed directly by economic division. Several place also managed by general affair division. The separate management dificult the improve execution of Integrated Wonorejo Zone at that time.

Reviewed from the theory of policy change by Howlett and Cashore [7], change of policy include in goals, program and operational. Implementation of Integrated Wonorejo Zone in second period did not experience significant changes. However, differentiation of policy in first and second period is operational. Former zone management which directed separatelly, change into integrated operational. Howlett and Cashore explained that one change which regulated by the policy is the goals. Integrated Wonorejo Zone in first period have goals as recreation and attraction site. Many building established in the form of game and play ground, an effort to support economic revenue for Lumajang.

Implementation of Integrated Wonorejo Zone in second period is not clear on the concept or goals. In one side, the playground is still work, but several unsustainable building is function-changed into governmental office and department. Circuit of motor cross was established behind the building – again, the goals for establishing this facility are not obvious. Tourism concept and public service cannot be

located together. Tourism building become ineffective in the workdays of civil servant. Only Saturday and Sunday the playground in Integrated Wonorejo Zone can be operated. This proved that the concept change of Integrated Wonorejo Zone is not clear compared to policy change theory by Howlett and Cashore [7].

Implication

We compared the implication in Integrated Wonorejo Zone on both first and second period. The implication observed between each policy change in Integrated Wonorejo Zone, Lumajang (Table 1).

Table 1. Implication of Integrated Wonorejo Zone

First period	Second period
- The increased value of the land sale	- The increased value of the land sale
- Increased Revenue	- Increasing Revenue only from waterpark.
- Increasing population	
- Aculturation	- Increasing population

Each period have four points of implications for community and government. Four points in the first period are increasing community's economy, increasing the value of selling the land, rising the native incomes of the zone and an increase in population. Similarly, implications on the second period are also increased the value of the land sale, and increasing the number of population, while the increaseing revenue only came from waterpark fares. Thus, implications of the first to second period are not significantly different.

CONCLUSION

Policy change implication toward Integrated Wonorejo Zone is not significant. After Integrated Wonorejo Zone executed by RTRW 2008-2028, manager of this zone is Tourism, Art and Culture Office of Lumajang Regency, while before managed by more than one institution in department level. Budgeting activity by Tourism, Art and Culture Office is limited to improve the condition as well as lack of human resources and finance.

Before setting the spatial planning, Lumajang government has taken the decision to change the Integrated Wonorejo Zone into an office building and department with consideration of utilization although lack of maintenance and finance. It is sharp contrast when they previously arise and define the spatial zones as a strategic area ofeconomic development. The implications of changes in the zone look indifferent from the first period.

Recommendation

The concept of an integrated Wonorejo Zone needs to be reviewed and determined as a consistent concept for economic development zone, because this zone is expected to contribute to the development of the economy.

Lumajang Regency must decide a proper policy for Integrated Wonorejo Zone to achieve the goals of becoming the zone of strategic economic development, and emphasize more on tourism sector. Otherwise, the policy applied to transform Integrated Wonorejo Zone into integrated agency to improve public service and administration affair in Lumajang.

It also important to improve the status of tourism in the level of management that is more adapted to the function of the facility in the zone. It is because the assets submission to the Office of Tourism, Arts and Culture, Lumajang was felt less precise.

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Investigating the Image of Japanese Food on Intention of Behavior: Indonesian Intention to Visit Japan

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Abstract

Country-of-Origin Image (COI) has been recognized as a possible factor to influence the image of product especially toward international products. COI occurred due to the consumer's behavior which uses the nation image on some international products to consider the quality before they build a bearing on the products. The better the country's image in some products, the greater influence and impact will be given to their products image. Many previous studies have been done on COI toward foreign products, focused on the intention behavior. The intention behavior in this study is including a purchase intention or intention to try a product. However, research about its impact in the term of tourism is limited. Moreover, the use of international food as an object is limited as well. This study addressed an insight of tourism impact about Indonesian intention to visit Japan which influenced by image of Japanese food, which given by country's image (Japan). The results showed that the image of Japanese food perceived after they consumed it, significantly influence an intention to visit Japan. Therefore, marketing and promotions of a countries as one entity should focus to use their traditional food (international product for other people from other countries) to promote their country as tourism destination.

Keywords: Country of Origin Image (COI), Intention to Visit a Country, International food.

INTRODUCTION

Nowadays, the behavior of tourist are found more informed, mobile and adventurous than before. This phenomenon is important to be traced because it is not only a market for the future development of the tourist themselves but also the motivation to choose a country as a tourist destination. However, there are a lot of motivations behind the decision of the most tourist to visit a country. The attitude of many people such as like to try international product can be used as a prediction on their intention behavior [1]. For example, a recent study has been done by Phillips [2] which use country image of Korea and knowledge about Korean food, to build an intention to try the food and furthermore to visit South Korea. Therefore, the willingness on consuming international food can be used to predict their intention to visit a country.

The forming of consumer's intention to visit a country can occur due to the novelty seek. Novelty seek is one of the push factors or motivation that can be used as a precursor to increase the intention to visit a country. It can be described as follows; after a consumer have an experience in consuming international food,

which is sushi and/or sashimi, they will feel curious to try sushi and/or sashimi in its original country. Therefore, to fulfill their curiosity aand to get a new experience, then visiting Japan is an action which may be taken. However, it still need a further research to confim this presumption.

International food such as Chinese, Japanese and Italian have shown significant popularity growth within the ethnic food market in Indonesia. The existence of the international food offers a unique concept of food, especially Japanese Food. Beside sushi and sashimi, Japan has many popular foods known by people in other country, e.g. tempura, nankotsu, tonkatsu, Chinese noodles, nuts, curry, yakiniku, cream puff, manju, dango, ochazuke, mochi, nigiri-zushi, udon, soba, donburi, okonomiyaki, takoyaki, and many more. However, based on Japan Guide [3], sushi and sashimi which use raw seafood such as fish, shellfish and shrimp as main ingredient, are the most well-known Japanese food. Therefore, sushi and sashimi were traditionally attached to the image of Japan which can provide a special experience on consuming it, both in Japan and in other countries. Image of sushi and/or sashimi as one of the well-known Japanese food, is healthy and fresh food [4] which contain omega 3 fatty acids, beneficial minerals and carbohydrates from the rice.

Only a few researches have been done on targeted food products [5] and exploring the country-of-origin image (COI) together with the

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international food and the intention to visit the country where the food is comes from [6]. Then this study aims to address the research need and provide meaningful information to international food marketers and developers for expanding their markets globally. We were investigating whether sushi and/or sashimi influences the intention of Indonesian to visit Japan after they consume it or not. It is appropriate when the researcher try to explore sushi and/or sashimi as an object to attract tourists to visit Japan.

RESEARCH METHOD

Questionnaire survey was developed to investigate the intention of Indonesian to visit Japan before and after consuming sushi and/or sashimi (Table 1). Most of the measurement items were adapted from previous studies: though/believed that sushi and/or sashimi is healthy; though/believed that sushi and/or sashimi is nutrious [7]; have plan to visit Japan soon [8]; Japan is safe and secure country to visit [9,10]. These fourth items include a statement about the image of Japan, Japanese food image and the level of consumer intention to visit japan.

Table 1. Items of Questionnaire

No	Before	After
1	I thought that sushi and/or sashimi is healthy.	I believed that sushi and/or sashimi is healthy.
2	I thought that sushi and/or sashimi is nutritious.	I believed that sushi and/or sashimi is nutritious.
3	I have plan to visit Japan in the near future.	I have plan to visit Japan in the near future.
4	Japan is safe and secure country to visit.	Japan is safe and secure country to visit.

Respondents were asked about their level of agreement on each of the 4 statements about image of Japan and Japanese food on a 5-point Likert scale (1 = strongly disagree, 3 = neutral, 5 = strongly agree). The survey also included respondents' demographic information such as gender, age, previous experience of consuming sushi and/or sashimi, and monthly income.

In this studies, the object was food product form Japan, i.e. sushi and sashimi. The concept in this study is aimed to develop a greater understanding about the overall study (Fig. 1). Based on previous study, an international food can be found as attractive things by consumer. Uniqueness was one of the reasons. Faced with a phenomenon above, consumers will have a

curiosity not only to try those international food but also gathering various information related to the international food, such as where the food comes from.

International foods itself represent the image of the country origin. The image of a country origin will be automatically attached. Japanese people began eating sushi and sashimi in the 8th century. The images of Japan is a sophisticated country in food producing that consider eating sushi and sashimi as protein sources. The habit of eating sushi and sashimi are believed to make Japanese people smarter.

To directly experience the international food and satisfy the curiosity of consumers, a visit to the country origin of an international food was a great choice for consumers. Thus, forming motivation to visit a country can be clearly explained step by step throuogut the evaluation of country of origin image attached in the international food. The dotted line in Figure 1 shown that consumer is potential to be a tourist after they tried the international food of a particular country. Researchers expected that these intention can be carried out by the consumer in the future. Therefore, intention in this study refers to consumer desire to visit Japan which may be performed in the future. In addition, a recent study showed that food is motivation for travel [11] and it is a key factor destination choice [12]. Therefore, some experts suggest that food is a good promotional tool for tourism destination [13].

Sample and Data Collection

The purpose of this study was to get a better understanding on Indonesian market and to assess the potency of Japan as tourism destination based on country image to build a future intentions. This study also considered a concept of country image which traditionally have been applied to the international products. We empirically investigated the application of these concepts to study potential consumers' intentions to visit the country of origin. The sample was 300 consumer of three Japanese restaurants (Sugoi Tei, Saboten, and Hachi Hachi) in Malang, East Java which represent general Indonesian. The demographic profile of respondents is shown in Table 2.

From 300 respondents, 35% were females and 65% were males. Over half of the respondent group (67.7%) was under the age of 24-25 and 17% is 19-21 years or older.
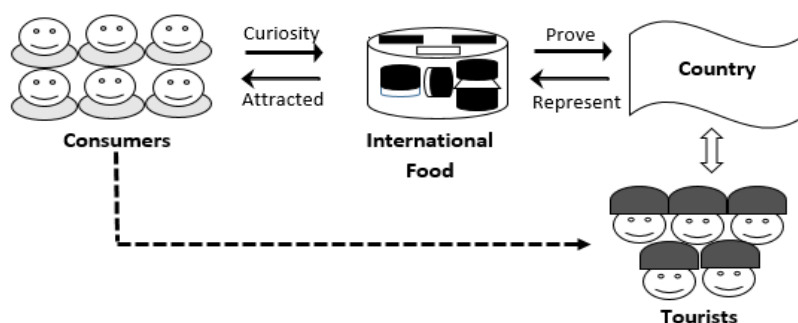
Figure 1. Concept of the Study

Table 2. Demographic profile of respondents (n =300)

Demographic profile	n	%
Gender		
Male	105	35
Female	**195**	**65**
Age		
19 – 21	51	17
22 – 23	46	15.3
24 – 25	**203**	**67.7**
More than 25	0	0
Previous experience consuming sushi and/or sashimi on the last 1 year		
Never	0	0
1 times	47	15.7
2-5 times	**172**	**57.3**
More than 5 times	81	27
Monthly Income (Rupiah)		
< 500,000	22	7.3
500,000 – 1,000,000	66	22
1,000,001 – 1,500,000	45	15
1,500,001 – 2,000,000	31	10.3
> 2,000,000	**136**	**45.3**

Half of the respondents had a previous experience consuming sushi and/or sashimi on the last one year around 2-5 times (57.3%) and 27% had more than 5 times consuming sushi and/or sashimi in the past one year. Almost a half (45.3%) of the respondents were had a monthly income more than Rp. 2,000,000,- per month and 22% were around Rp. 500,000 – Rp. 1,000,000,-.

Data Analysis

Descriptive statistics were calculated by using the Statistical Package for the Social Sciences (SPSS v.20). T-test was used to analyze the data by two measurements on the same subject against a particular treatment effect. The measurements were carried out before and after consuming sushi and/or sashimi. Intention to visit Japan before they consume sushi or sashimi compared to the situation after they consume it by using T-test.

RESULTS

T-test Table 3 showed an increasing intention to visit Japan, from 3.30 to 3.75. More respondents answered agree (4) after they consume sushi or sashimi compared to respondents who disagree before eating sushi or sashimi, with most answer.

Table 3. T-test Results

Consuming Sushi or Sashimi	Mean	N	Std.	Std. Error Mean
Before	3.30	300	.960	.055
After	3.75	300	.825	.048

Meanwhile, the Sig (2-tailed) Table 4 comparison (0.000) < α (0.025), implied a significant effect of consuming Japanese food to the intention to visit Japan. The respondents' intention to visit Japan is increasing after consuming Japanese food.

Table 4. Paired Samples Test

Variables	Paired Differences		Sig. (2-tailed)
	Std. Deviation	Std. Error Mean	
Consuming Sushi or Sashimi	1.064	.061	.000

DISCUSSION

This study consider two important concepts, country image and intention to visit a country [14]. Indonesian people's intention to visit Japan is influenced after they consume sushi and/or sashimi. We assumed that the attitude on consuming sushi and sashimi gives a significant effect to Indonesian people's intention to visit Japan. Thus, it confirmed the idea about seeking novelty that underlies the intention to visit Japan using sushi and/or sashimi as a push factor motivation.

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Japan government and private sectors need to educate the potential market segment about the country and food using various methods to promote Japan in the future. Japan might having Food Network specialists, which focus on certain aspects of sushi or sashimi, including healthy and fresh characteristics as a promotional tool.

This result give additional information to the marketing of Japanese Restaurant franchise, e.g. Katsusei, Hoka-hoka Bento, Sushi tei, Hanamasa and many more which exist in Indonesia. The restaurant is strategic place to promote Japan as a tourism destination.

Since the increasing of respondents' intention to visit Japan after consuming sushi or sashimi was significant, we assumed that sushi and sashimi can be used as an object to attract tourists to come to Japan. It is also supported by Phillips [2], which stated that individuals with a positive attitude on consuming international cuisine are more likely to form their intention to visit the original country of the international food.

CONCLUSION

The international food of a country can be used as a media to attract consumers. Thus, it is the right media to promote the origin country along with the delivery of culture.

RECOMMENDATION

The object of various international food and different country as a tourist destination could be used for a more representative and credible further research. Other variables such as actual behavior may included to investigate the possible effects of COI on consumer's actual behavior to visit a country origin.

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Designing Promotion Strategy of Malang Raya's Tourism Destination Branding through Audio Visual Media

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Abstract

This study examines the suitability concept of destination branding with existing models of Malang tourism promotion. This research is qualitative by taking the data directly in the form of existing promotional models of Malang, namely: information portal sites, blogs, social networking, and video via the Internet. This study used SWOT analysis to find strengths, weaknesses, opportunities, and threats on existing models of the tourism promotion. The data is analyzed based on destination branding's concept indicators. Results of analysis are used as a basis in designing solutions for Malang tourism promotion through a new integrated tourism advertising model. Through the analysis we found that video is the most suitable media that used to promote Malang tourism in the form of advertisements. Videos are able to show the objectivity of the fact that intact better through audio-visual form, making it easier to associate the viewer thoughts on the phenomenon of destination. Moreover, video creation of Malang tourism as well as conceptualized ad is still rare. This is an opportunity, because later models of audio-visual advertisements made of this study is expected to be an example for concerned parties to conceptualize the next Malang tourism advertising.

Keywords: Advertise, SWOT Analysis, Malang City, tourism promotion

INTRODUCTION

This study examines about design of promotion for Malang Raya's tourism destination area. Malang is a diverse area with high tourism potential. Malang Raya stretches in the middle of East Java province with mountainous topography in the northern and lowlands at southern. Various well known tourist destinations in this area, such as: Bromo Tengger Semeru Tourism Park, Wonosari Tea Gardens, Waduk Selorejo, Coban Pelangi, Singosari Temple, Balekambang Beach, Sempu Island, and much more [1].

Local governments actually had a program used to lift the tourism sector. But some programs still can't be maximized yet, thus Malang still need help in determining the proper promotion models which can be widely publicized to general public. Promotion which is now circulating widely in the media is a form of promotion that has not been integrated yet. In other words, each tourism object in Malang Raya has its own promotional models that tend to compete with each other. In fact, an existence of integrated campaign models will be an easier way for government to bring Malang to the better promotion concept [2].

Promotion which had done separately from the internal promotion of tourism object is Word of Mouth (WOM) by the personal/company's blogs in the online media. The use of WOM for promotion was considered quite well because WOM include personal assessment that obtained through direct experience by the researcher [3]. Besides blogs, Malang Raya's tourism promotion is also promoted by websites. Some people also use social networking and videos to introduce Malang Raya's tourism objects. The use of internet to promote the tourism is being mostly used, since the internet is a medium that has a wide range and boarder-less. Proper use of Internet with conceptualized advertising models will be able to deliver the products on a desired goal. Just like any other product, tourism is a commodity that needs concept to be promoted [2]. It aims to introduce the objects widely, so it can raise awareness for those who do not know about the tourism object of Malang Raya yet. That's why then strategy were needed to answers the right advertisements models to get an integrated and well conceptualized for Malang Raya's tourism advertise.

This new promotional model will describe the natural resources and tourism potential within the scope of Malang Raya. Thus, it will able to bring out awareness of potential tourists. This is the repulsion of the efforts to establish the

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concept of destination branding, which is expected to be passed on by the advanced form of related parties.

The aim of this study was to create an advertising model, which according to the Handbook of Tourism and Destination Branding, advertising lies in making the initial level, functions only as a trigger to make potential tourists interested to come to the tourism object [2] of Malang. However, this study did not produce any action at the level of a tour and does not address the ideal strategy to really make potential tourists decided to visit tourism object.

MATERIALS AND METHODS

This research used descriptive qualitative approach, describe situations and events [4]. The primary data in this study is promotion models of Malang Raya's tourism on the web (internet), and direct documentation studies on Malang Raya's tourism object. Secondary data obtained through the literature studies on books, scientific journals, and previous research.

Data Analysis

We used SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis on the previous promotion models covering performance, the used term, visualization of images, the impact to the audience and the suitability of the model with the promoted concept in destination branding. The results of SWOT analysis become the basic in creating new ad model for Malang tourism promotion, i.e. integrated tourism destination branding of Malang Raya.

We expected this model introduce a more representative tourism object of Malang Raya. Promotion concepts used in this study is the suggestion in the form of "advertising model", which "Model" is a specification of the "form" itself.

RESULTS AND DISCUSSION
Recent Advertisement Media

This study was expected to produce representative object of Malang Raya's tourism. Ads were chosen for its effectiveness to display, perform, and give overview to the public about information with particular purpose. It also has a complex form and goals that aligned with promoted object of tourism. Generally, the form of ads presentation is non personal information about a product, brand, company, or shop run with certain compensation costs. Advertising has four main functions: (1) to inform the audience (informative), (2) to affect the audience to buy (persuading), (3) to refresh the information that has been received by audience (reminding), and (4) to create a pleasant atmosphere while audiences receive and digest information (entertain).

We found that the most widely used medium for tourism promotion is online media. Ease of access and flexibility of online media make it capable to contain all required information to promote tourism. The internet can be used to promote visually (only in the form of text and images) and also in audio visual (such as video). This is the reason of the sampled existing models is focused on online media. Addition reason was the other media promotion, e.g. printed media is rarely found.

Many posts, articles, and videos found in internet about Malang indicated the enthusiasm of the community about the destination. The article is strongly diverse, e.g. post that contains personal experiences and even structured posts that aiming to attract tourists. The promotional models are websites, blogs, social networking and online video about tourism.

There are two indicators that detect the SWOT in this study. First, the performance of the previous model – used to find the most suitable promotional models as medium for advertising the tourism. Second, fit promotional model to lift Malang Raya's tourism that align with the concept of destination branding. The model can be formulated in a new shape of Malang tourism advertising to help stakeholders create a promotional model based on destination branding concept.

To compete with other tourist destination, Malang should have highlighted characteristics in the concept establishment of the destination branding. The concept of destination branding is a promised memorable travel experience that is uniquely associated with the destination object [5]. It means that the promotion of Malang Raya as the tourism destination branding should provide an overview of the unique tourism objects and any content that intersect with Malang Raya's tourism in universal packaging.

Related to the branding purposes, ads establish a right perception towards the minds of consumers, so that they can understand more about what is offered by a brand. Efforts to communicate the brand is promotional activities. Promotion as a tool of communication between

producers and consumers is aimed to introduce the product, advantages, types, to detail that distinguishes the product with another product.

Tourism as a product is also treated similarly. Promotion of the destination should be focused on the target market segment when creating a brand [6]. It implies that the understanding on the target segment is essential. Tourism destination promotional model must include the required information for potential tourists. In addition, information should not only provide a reference, but also wrapped in an attractive packaging design, to keep attract the potential tourists.

Previous promotional activities was done over the internet as a series of efforts to inform unaware public on the tourism potential of Malang to become aware, and eventually attracted to the potential tourism object, and ended by decided to visit the attraction.

Promotional model with the concept of destination branding should also associate a brand to a geographic area with collected perceptions about the uniqueness [7]. All models that have been analyzed in this study have its own role to display Malang as a tourist destination area. However, the purpose of this research is to create an advertising model.

According to the source taken from the Handbook of Tourism and Destination Branding, advertising were lies on the initial level. It is only functioned as a trigger to make tourists interested to visit the tourism object [2] in Malang Raya. Therefore, the domain of this study did not recommend traveling action or discuss about what the ideal strategy in the mixed promotion to directly make potential tourists decide to visit the tourism object.

Related to that purposes, media that used to advertise must be a precise media which is able to change perception of audience as effectively as possible. It also needs to bring them to the level of their awareness on the diverse of Malang Raya's tourism potential objects.

SWOT Analysis

Four selected promotion through the internet media, i.e. websites, blogs, social networks, and videos were analyzed base on the strengths, weaknesses, opportunities and threats. Websites and blogs are very instrumental in giving detailed information about the tourism object, providing practical travel tips, transportation, and the plus or minus subjective opinion of the author. This kind of information is needed to convince

potential tourists on a particular tourism object. In other words, this model is an advanced form of advertise. Thus, the model is no longer aimed to "introduce", but more to "convince" and "produce an action" in the form of traveling.

Unlike the websites and blogs, promotion through social network is a method of promotion which relatively less qualified to introduce tourism. Social networks mostly used to promote products by uploading photos, price lists and product details in simple way. If the product is replaced, the information different with the previous products detail.

It took a lot of detailed information to convince prospective tourists to visit the tourism object with the promise of an unique experience. Promoting tourism destinations means to build a psychological bond between potential tourists to these destinations [2].

Social network has limitations in showing the details in question. However, social network has its advantages to display the direct two-way communication that is not provided by any other promotional models. Prospective tourists can directly interact with the owners of social network account to resolve their curiosity. Nonetheless, communicate in social networks needs someone to have an account on the site previously.

From the four models that have been described, it was found that the video is the most suitable advertising medium. Advantages possessed by the video are the elements required by a travel destination to promote itself. Name, symbols, words, signs, and other explanations about the tourist destinations are summarized in the form of moving pictures and sound efficiently. Tourism video is able to represent the memorable travel experience to the audience through the moving pictures. Uniqueness in the video could give impression and get attention on tourism objects in their ads.

Characteristized simple video is considered the most suitable variable to introduce a product or service. Thus, video is chosen as to create a new model form of tourism advertising. Video have a high level of complexity in the making process compared to other promotional models. It takes time, concept, effort, and cost to produce brilliant videos. However, the video is still an excellent model Ads.

Further assessment on SWOT showed that well conceptualized ads in creating of video on Malang tourism were still rare. This is an opportunity, because later models of audio-visual

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advertisements is expected to be an example for concerned parties in conceptualizing the next Malang tourism ads.

CONCLUSION

SWOT analysis on the performance and application of the destination branding concept, found that each of the existing models have informed the elements needed to promote the tourism commodities. Thus, we did not find difficulty in making model of a new tourism promotion that based on destination branding.

The four existing models has its own role in promoting Malang Raya. However, websites, blogs, and social network includes detailed information needed to convince potential tourists in particular tourism object.

The most suitable model is the video for tourism advertise, because video is able to represent the promise of a memorable travel experience with the audience better with moving pictures.

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MANUSCRIPT SUBMISSION

FOCUS AND SCOPE

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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The introduction explains the background of the problem, the study of literature and research purposes. Some initial introduction paragraphs explain the problem and background to these problems [1]. The next few paragraphs explain the study of literature that contains recent knowledge development which is directly related to the issues. The last paragraph of the introductory section contains a description of the purposes of the study. *(Calibri 10 Justify)*

MATERIAL AND METHOD *(Calibri 10 Bold, Left, Capslock)*

This section describes the types of methods (qualitative, quantitative or mixed-method) with details of methods of data collection and data analysis [2]. This section also describes the perspective that underlying the selection of a particular method. *(Calibri 10 Justify)*

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Address : afiliation address include post code

Data Collection *(Calibri 10 Bold, Left)*

Explain the data collection methods, i.e. surveys, observations or archive, accompanied by details of the use of such methods. This section also describes the population, sampling and sample selection methods. *(Calibri 10 Justify)*

The use of English language should followed proper grammar and terms. Name of organism shoul be followed by its full scientific name in the first mention, in *italic* [3]. Author of the scientific name and the word of "var." typed regular. Example: *Stellaria saxatillis* Buch. Ham. First abbreviation typed in colon after the abbreviated phrase.

Author must use International Standard Unit (SI). Negative exponent used to show the denominator unit. Example: $g\ l^{-1}$, instead of g/l. The unit spaced after the numbers, except percentage [4]. Example: $25\ g\ l^{-1}$, instead of $25gl^{-1}$; 35% instead of 35 %. Decimal typed in dot (not coma). All tables and figures should be mentioned in the text.

RESULT AND DISCUSSION *(Calibri 10 Bold, Left, Capslock)*

This section contains the results of the analysis and interpretation or discussion of the results of the analysis. Describe a structured, detailed, complete and concise explanation, so that the reader can follow the flow of analysis and thinking of researchers [5]. Part of the results study should be integrated with the results of the

analysis and the results and discussion are not separated.

Table

Table should be submitted within the manuscript and in separated file of *Microsoft Excel* (xls.). Table whould not exceed 8 cm (one column) and 17 cm (two columns). Table should be embedded in different page after references.

Table should be numbered in sequence. Table title should be brief and clear above the table, with uppercase in initial sentence. Vertical line should not be used. Footnote use number with colon and superscripted. Symbol of (*) or (**) was used to show difference in confidence interval of 95 and 99%.

Table 1. Example of the Table ^(Calibri 8.5 Left)

| No	Point ^(Calibri 8.5 Justify)	Description
1		
2		
3		
4		
5		

**Sources:** Journal of PPSUB ^(Calibri 8.5 Left)

Figures

Figures should be in high resolution and well contrast in JPEG or PDF with the following conditions:

- Monochrome image (line art), figures of black and white diagram (solid/no shades of gray), resolution 1000-1200 dpi (dot per inch).
- Combination Halftone, combine figure and text (image containing text) and coloured graphic or in grayscale format. Resolution 600-900 dpi.
- Halftone, coloured figure or grayscale format without text. Resolution 300 dpi.

- Black and white figure should be in the grayscale mode, while coloured figures should be in RGB mode.
- Figure should not exceed the width of 8 cm (one column), 12.5 cm (1.5 columns) or 17 cm (two columns).
- Figures title typed clearly below the figure.
- Figure with pointing arrow should be grouped (grouping).
- Figures were recommended in black and white.
- Legend or figure description should be clear and complete. If compressed, the figure should be readable.
- Statistic graphic should be supplemented with data sources.
- If the figures come from the third party, it should have the copyright transfer from the sources.
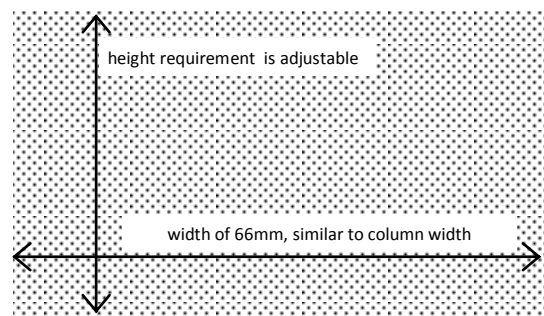
Figure 1. Illustration of Dimensional Figure of one column width. Figure dimension adjusted to the width of one column. Name the figure (diagram) written below the image. ^(Calibri 8.5 Justify)
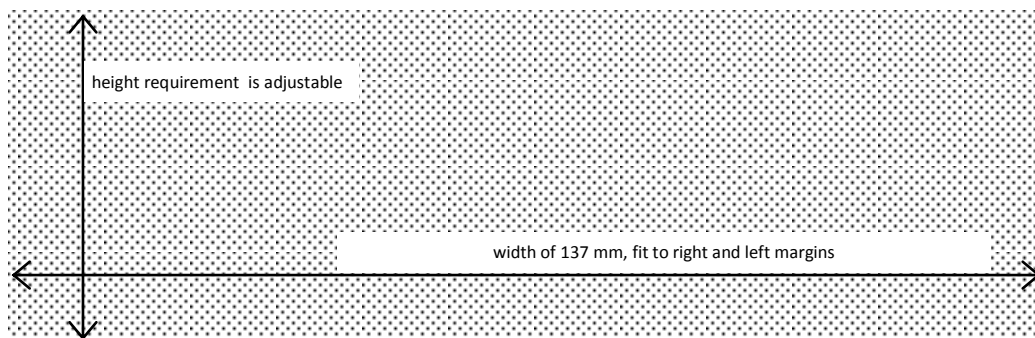
Figure 2. . Illustration of Dimensional Figure of two column width. Figure dimension adjusted to the width of two columns (137 mm). Figure were align top or bottom of the page. ^(Calibri 8.5 Justify)

References

1. Primary references include journal, patent, dissertation, thesis, paper in proceeding and text book.
2. Avoid self citation.
3. Author should avoid reference in reference, popular book, and internet reference except journal and private ana state institution.
4. Author was not allowed to use abstract as references.
5. References should been published (book, research journal or proceeding). Unpublished references or not displayed data can not be used as references.
6. References typed in numbering list (format number 1,2,3,…), ordered sequentially as they appear in the text (system of Vancouver or author-number style).
7. Citation in the manuscript typed only the references number (not the author and year), example: Obesity is an accumulation of fat in large quantities which would cause excessive body weight (overweight) [1]. Obesity is a risk factor of diabetic, hypertension dan atherosclerosis [2].

CONCLUSION (Calibri 10 Bold, Left, Capslock)

Conclusion of the study's findings are written in brief, concise and solid, without more additional new interpretation. This section can also be written on research novelty, advantages and disadvantages of the research, as well as recommendations for future research. (Calibri 10 Justify)

ACKNOWLEDGEMENT (Calibri 10 Bold, Left, Capslock)

This section describes gratitude to those who have helped in substance as well as financially. (Calibri 10 Justify)

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