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Perceptions of Visitors towards the Implementation of Sustainable Tourism at Kawasan Ekowisata Mangrove Wonorejo, Surabaya

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Abstract

The purpose of this study is to determine visitors' perceptions towards the implementation of sustainable tourism at Kawasan Ekowisata Mangrove Wonorejo (KEMW) as seen from the perspectives of the environmental, economic, as well as social dimensions. The research method used is descriptive quantitative by distributing questionnaires to 101 respondents as KEMW visitors. The study result shows that the implementation of sustainable tourism from the environmental dimension still prioritizes goals that lead to conservation. Sustainable tourism from the economic dimension is directed to provide benefit to the local economy. Whereas from the social dimension, KEMW has given visitors a sense of comfort and security. KEMW management is expected to be able to create more proactive programs, to educate visitors about conservation, and to involve the community to clean up waste in deeper forest areas. Moreover, the management should promote the variety of processed local mangrove products, as well as add facilities that provide easier access for visitors with special needs. Further research can be done by either measuring the level of visitor satisfaction towards the services of KEMW's employees or identifying the impact of the presence of KEMW on the economic and social characteristics of the local population.

Keywords: Ecotourism; Kawasan Ekowisata Mangrove Wonorejo; KEMW; mangrove; sustainable tourism.

1. Introduction

Sustainable tourism is the activity of developing tourist destination that protects the environment, with minimal influence on the social characteristics of these tourist destinations (Belias et al., 2016). Tourism should not destroy resources that become the future of tourism, especially the physical environment and the social order of local communities (Swarbrooke, 1998). Furthermore, sustainable tourism must pay attention to economic aspects as well. Sustainable tourism, according to Lane (1994) is a concept in tourism that aims to minimize environmental and cultural damage, to increase visitor satisfaction, as well as to maximize long-term economic growth for the surroundings.

The term "sustainable tourism" became popular in the late 1980s (Novelli & Benson, 2005) and initially discussed the natural environment only. However, now sustainable tourism also includes aspects of financial income from visitors and the creation of employment opportunities for the surrounding communities (Belias et al., 2016). Surabaya City has several mangrove areas which spread out from the northern to eastern coasts. KEMW is one of the mangrove ecosystems that has been developing in East Surabaya. Many visitors expressed interest in KEMW because of its beautiful natural scenery, its unspoiled atmosphere from urban life, the fresh air it offers, and the opportunity to get to know more in-depth about the natural environment

(Murtini et al., 2018). The mangrove forest areas in KEMW are managed by the Mangrove Information Center (MIC) with an area of approximately 200 hectares. MIC has a focus on developing mangrove ecotourism, one of which is by seeding mangroves and promoting products made from mangroves, as well as playing a role in providing extensive information to the public about mangrove plants (Nurcahyawati et al., 2018).

KEMW is open to the public as a botanical garden, and there are no entrance fees. So far, there has been no research on visitors' perceptions of KEMW as one of the sustainable tourism evaluation materials. Based on the background above, this study aims to find out the perception of visitors toward the implementation of sustainable tourism in KEMW, Surabaya, which seen from the environmental, economic, and social dimensions. Perception is a process of understanding or an interpretation of something taken through the five senses. Therefore, the researchers want to find out how visitors perceive the implementation of sustainable tourism at KEMW.

2. Literature review

Swarbrooke (1998) formulated the dimensions of sustainable tourism, namely the environmental dimension, the economic dimension, and the social dimension. The environmental dimension contains five

aspects, which include the natural resources, the natural environment, the agricultural environment, the wildlife, and the built environment. Meanwhile, the economic dimension has three aspects: The first aspect, cost-benefit analysis from the commercial side of tourism. The second aspect is the type of economy in this area, whether the economy is independent (materials, products and labours are local) or dependent (resources rely on outsiders). Last is the multiplier effect, which intended as the spending of visitors received by residents through a series of waves. About the social dimension, Swarbrooke (1998) mentioned four aspects to be discussed, namely: equity, equal opportunity, ethics, and equal partners. Each aspect will be discussed one by one.

2.1 Environmental Dimension

The five aspects of the environmental dimension are very different from one another, but they can be interrelated. For example, a coastal area that is a natural environment can be turned into a pond that classified as an agricultural environment. The five aspects are as follows: (Swarbrooke, 1998)

1. Natural resources
Tourism uses many natural resources such as fresh mountain air, hot springs that believed to cure diseases which are then turned by spa entrepreneurs into public baths. On the one hand, tourism activities can provide financial benefits from the protection of natural resources. An example of this would be the processing of local mangrove fruits that were initially unusable and thrown away/left to rot due to excess, into consumable products. But on the other hand, tourism can also be a threat to the integrity of resources if the number of consumers is not limited.
2. Natural environment
For centuries, almost all the integrity of the natural environment in the world has been affected by human civilization. The natural environment includes mountainous areas, oceans, rivers and lakes, caves, beaches, and forests. In some places, the natural environment is at the core of tourism activities that becomes its attraction, especially if the natural environment is kept clean from waste. However, efforts to protect the natural environment can also be considered as obstacles to the development of tourism.
3. Agricultural environment
The agricultural environment includes an extensive agricultural system in the sense of covering livestock and fisheries as well. Preservation of the greeneries needs to be considered so that tourist

attractions are well-maintained, and the function of agriculture does not fade away. Keep in mind that tourism also harms the agricultural environment. The development of tourism takes over farming lands and uses water needed for agricultural needs, as well as employment in the tourism sector, has the potential to cause young people to quit farming. Therefore, a precise arrangement of the forest/ agriculture area is needed so that the negative impacts of tourism can be reduced. However, tourism can also benefit the agricultural environment, for example, by selling crops to visitors.

4. Wildlife
Regarding the wildlife, Swarbrooke (1998) grouped them into several categories which include places where wildlife as the main attraction such as wild-safari-viewing activities. Marine wildlife requires visitors to set sail and even to dive, wildlife that are the core of hunting activities such as fishing, captive-bred wildlife animals or aquariums, and many more. Swarbrooke (1998) explained that tourism could disturb wildlife through habitat destructions, improper feeding activities, forest fires, disruption of the breeding cycle, and the pickings of rare plants. So, tourist destinations must maintain their role as habitats for wildlife, and not driving them away.
5. Built environment
There are three levels in the built environment, namely a single building or structure, small-scale settlements such as rural areas, and large-scale settlements such as urban areas. The availability and cleanliness of facilities in each of the built environment also influence tourism activities. Safety and comfort at the parking lot also support the interest of visitors to revisit the tourist destination.

2.2 Economic Dimension

In the economic dimension, it is crucial to have a cost-benefit analysis, a discussion of the types of economy in tourism areas, and a multiplier effect study, which described as follows: (Swarbrooke, 1998)

1. Cost-benefit analysis
According to Swarbrooke (1998), several examples of economic benefits from tourism include the creation of new jobs and the growth of a small urban economy due to the activity of selling products and services. Meanwhile, examples of costs from tourism include seasonal employment with meagre wages and opportunity costs where the money invested in tourism could not be spent for other purposes. In addition to investment costs,

there are also operational costs, maintenance costs, and repair facilities costs. Cost-benefit analysis is used to calculate losses (in the broadest sense) as well as gains to make rational decisions. However, there are some limitations to this analysis. For example, it is not easy to measure the long-term impact of the existence of a tourist destination, as well as perceptions towards cost-benefit, which differ from one person to another. Cost-benefit analysis is considered necessary because tourism development can provide tremendous benefits or losses to the surrounding communities.

2. Type of economy in the tourism area

There is a relatively independent type of economy in the tourism area, which almost all material/foods/labour needed can be fulfilled from local suppliers. Nevertheless, there is also a type of economy that is very dependent on external suppliers. The economic impact of tourism will vary greatly depending on the type of economy. In terms of employment in tourism, it is strongly recommended to hire workers from the local community. However, sometimes economic leakage occurs by hiring workers who are not from the local community, or buying products from outside the tourism area to be sold in tourist destinations.

3. Multiplier effect

When considering the costs and benefits of tourism for the local economy, attention needs to be paid to the multiplier effect. Every currency spent by visitors will circulate the local economy in a series of waves. Concerning sustainable tourism, Swarbrooke (1998) argued that the purpose of the multiplier effect is to maximize visitors' spending by providing varieties of products and services, as well as to minimize leakage of tourism revenue from the local economy by involving local workforces from the local community.

2.3 Social Dimension

Swarbrooke (1998) revealed that in the debate about sustainable tourism, the social dimension received very little attention. Typically, the environmental dimension gets massive attention. This matter is likely because social impacts are invisible and intangible, unlike environment impacts on the community. The social dimension that needs to consider in developing sustainable tourism is "4E", namely: (Swarbrooke, 1998)

1. "Equity", which reflected in how employees treat and serve visitors equitably, particularly pregnant women, older adults, toddlers, disabled people,

should be given special attention as needed. While pricing for product/service must be reasonable and affordable for visitors;

2. "Equal opportunities", for both male and female workers, as well as equality of rights for visitors in general, except those for whom the equity aspect is relevant;
3. "Ethics", where employees in the tourism industry are honest and friendly to visitors. By doing so, visitors feel safe from verbal and physical harassments, as well as harassment from other visitors such as path closure, cigarette smoke, noise, criminal acts, and other similar nuisances;
4. "Equal partners", where both visitors and employees treat each other as partners, instead of inferiors, such as how visitors treat employees, how employees treat visitors, how employees treat each other, and how visitors treat each other.

Hackett (1998) in Poitras & Donald (2006) added that tourism development provides inconvenience to local communities in an area, such as traffic jams in small towns and villages, especially when many tourist buses pass by. Another disadvantage is the emergence of cultural differences that lead to cultural conflicts between visitors and residents, as a result of the arrival of visitors and new developments in the local community (Poitras & Donald, 2006).

The mangrove forest is a complex ecosystem consisting of flora and fauna located in coastal areas, which lives in terrestrial and seawater habitats, between the tide and ebb boundaries. Mangrove plants act as buffers (natural shields) and stabilize the soil by capturing and trapping material deposits from the land that are carried by the river water (Hertati, 2017).

Mangrove forests provide many benefits and natural protection for humankind. Nevertheless, it is unfortunate that the local communities often damaged the mangrove forest areas and turned them into marine aquaculture areas for fishes, shellfishes, crabs, and others. Besides, they also process mangrove wood into firewood and building materials to make boats and buildings made of wood (Min, n.d.). Therefore, Min (n.d.) argues that mangrove forests need protection from damage caused by human activities, by natural events such as tidal waters that flood the mangrove forests, or waves that carry trash and dirt from the sea into the mangrove forest. Protection of mangrove forests is to protect the habitat of several vital species in the mangrove ecosystem, too. This kind of protection supports the development of sustainable tourism (Min, n.d.).

KEMW is located at coordinates of 120°47'52.52 "E - 120°50'47.34"E and 7°15'30 "S - 7°20'45"S with a

total land area of 264.87 hectares (Surabaya Environment Agency, 2012, in Kuntjoro et al. 2017). Currently, there are a total of 16 people working at KEMW who divided into three departments. They act as administrative staffs (2 people), operational & cleaning officers (12 people), and security guards (2 people). These 16 people are under the supervision of a civil servant (PNS) who assigned as the MIC coordinator.

Based on MIC archives, in 2018 alone, KEMW received visits from 570,154 people. While by the year 2019, per October 28th, 2019, there were 353,455 visitors. KEMW was inaugurated by the Food Security and Agriculture Department (DKPP) in 2010, with the initial aim of supporting various kinds of research. However, as time went on, the local Surabaya communities began to see the beauty of the mangrove forest and began visiting KEMW for leisure.

The Regional Regulation (*Perda*) of Surabaya No. 12 of 2014 concerning Surabaya Regional Spatial Planning (RTRW) confirms that the Surabaya East Coast area (*Pamurbaya*) is a protected area that aims to protect the environment and resources in coastal areas. More than that, Pamurbaya area also preserving the beachfront from activities that can cause sea damage and pollution, and protect it from carrying out development activities and land use that may damage the marine and environment (Kuntjoro et al., 2017). Coastal ecosystems in the *Pamurbaya* region are dominated by mangrove ecosystems, whose existence has functions and benefits both ecologically and economically for the environment and surroundings. Therefore, mangroves can be used as lands for ponds, as well as coastal or river protection (Kuntjoro et al., 2017).

3. Methods

This study visualizes visitors' perceptions of the implementation of sustainable tourism at KEMW. Therefore, the right type of research is descriptive quantitative. According to Creswell & Creswell (2018), quantitative research is an approach to test the theory by examining the relationships between variables. Meanwhile, according to Lans & van der Voordt (2002), descriptive research describes the reality of a phenomenon.

The sample selection method was non-probability sampling, as well as purposive sampling because the samples were only visitors who meet the criteria of the researcher. The number of targeted samples was 100 people who will be spread out from Monday to Sunday according to the proportion of the number of visitors each day. The sample criteria were visitors who visited KEMW, as well as those who were at least 17 years old by the time of the data collection period.

In the process of data collection, questionnaires were distributed on the 23rd-29th of October 2019. After sorting the data, there were as many as 101 questionnaires that could be taken to the next step.

Before the researcher distributed the questionnaires, a reliability test was carried out to determine the extent to which a measurement can be trusted. If the Cronbach Alpha coefficient is more than 0.7, the data is reliable, and then the data collection can proceed. The test results showed that the Cronbach Alpha coefficient was 0.923. The data was processed by calculating the mean value, standard deviations, and cross-tabulation (crosstab) technique.

4. Results

4.1 Respondents' Profiles

Before asking visitors' perceptions about the implementation of sustainable tourism at KEMW, the questionnaire discussed the respondents' profiles. Respondents' profile data include their gender, age, latest education, occupation, monthly income, frequency of visitation, companion, and primary purpose of visiting KEMW.

Table 1 shows that the number of men (46.5%) and women (53.5%) differed slightly, or could also show that they were quite balanced, with slightly more women than men. In terms of their age, among the 101 people, nearly half (47.5%) of the total respondents were aged equal or less than 24 years old. The second-largest group of respondents (32.7%) were aged 25-39 years old whereas the older age group of respondents, namely 40-54 years old and equal or more than 55 years old covered only 14.9% and 5% of the total respondents. The age calculation was determined by the time of data collection in October 2019. It appears that most of the KEMW enthusiasts (80%) were the younger age groups (39 years old and younger).

While a total of 29.7% out of 101 respondents were college-educated, 64.4% of respondents were high school-educated. Meanwhile, the remaining 5.9% were occupied by respondents with primary or junior high school education.

Regarding the occupation of the respondents, it was private-sector employees (36.6%), and students (25.7%) dominated the entire data, with the smallest data of 1% was a professional. A total of 20.8% filled out "Others". It gave information that they worked as retirees, house-wife, employees of government-owned-company, motorcycle taxi drivers, unemployed, high school students, artists, military officer, marketing staff, as well as a professional. There were entrepreneurs and civil servants, 9.9% and 6.9% respectively.

Meanwhile, 43.6% of respondents stated that their income range was $\leq$ IDR 2,000,000 a month. Those whose monthly income as much as $\geq$ IDR 10,000,001 was only 2%. The second-largest percentage of 36.6% was occupied by those whose income as much as IDR 2,000,001- IDR 5,000,000 per month. The rest 17.8% of respondents were occupied by those who earned IDR 5,000,001- IDR 10,000,000 a month. So, 80% of respondents earned or had an allowance (for students) of IDR 5,000,000 and below.

The next part in Table 1 shows how respondents came to visit KEMW. As much as 58.4% of the 101 respondents revealed that they visited KEMW for the first time, while those who had visited KEMW more or equal to 4 times were counted for 6.9% of the total respondents. The second and third ranks were those who had visited KEMW twice and third with a percentage of 23.8% and 10.9% respectively. So, there were 82% of respondents who came for either the first or second time to KEMW when filling out the questionnaire.

In terms of respondents' companions when visiting, 42.6% of them revealed that they were accompanied by friends/colleagues, 30.7% of respondents claimed to be accompanied by their lovers, 20.8% of respondents said that they came with their family, and 3% claimed that they came alone. The remaining 3% who mentioned "Others" stated that they visited KEMW to assist their students. So there were 73% of respondents who came to visit KEMW with friends, colleagues or spouses. Only one-fifth of respondents who considered KEMW as a family attraction.

Table 1. Respondents' Profiles

Variables	Answers	Frequency	Percentage
Gender	Male	47	46.5
	Female	54	53.5
Age	$\leq$ 24 years old	48	47.5
	25 - 39 years old	33	32.7
	40 - 54 years old	15	14.9
	$\geq$ 55 years old	5	5.0
Latest Education	Primary & Junior High School	6	5.9
	High School	65	64.4
	University	30	29.7
Jobs	University Student	26	25.7
	Private-Sector Employee	37	36.6
	Civil Servant	7	6.9
	Entrepreneur	10	9.9
	Others	21	20.8
Monthly Income	$\leq$ IDR 2,000,000	44	43.6
	IDR 2,000,001-IDR 5,000,000	37	36.6
	IDR 5,000,001-IDR 10,000,000	18	17.8
	$\geq$ IDR 10,000,001	2	2.0
Frequency of Visitation	Once	59	58.4
	Twice	24	23.8
	Thrice (Three times)	11	10.9
	$\geq$ Quatre (Four Times)	7	6.9
	None	3	3.0
Companion	Family	21	20.8
	Partner	31	30.7
	Friend/Colleague	43	42.6
	Others	3	3.0
Main Purpose of Visitation	Refreshing	76	75.2
	Taking Photos	5	5.0
	Joining an Activity	3	3.0
	Studying the Nature	4	4.0
	Accompanying Someone	3	3.0
	Seeking New Experience	4	4.0
	Others	6	5.9

Meanwhile, in terms of the respondents' primary purposes of visit, 75.2% revealed that they wanted to refresh their minds. The 6% out of respondents were occupied by those who filled out "Others". The remaining percentage was filled by those who came to take pictures (5%), took part in activities (3%), studied the nature (4%), accompanied someone (3%), and looked for new experiences (4%). KEMW's green panorama and a distinct atmosphere in Surabaya seem to be very sought by respondents for refreshment.

4.2 Visitors' Perceptions towards Sustainable Tourism Implementation at KEMW

The following tables show the results of data collection and processing related to respondents' perceptions towards the sustainable tourism implementation at KEMW, Surabaya as seen from the environmental dimension, economic dimension, and social dimension (see Tables 2-4). Descriptive statistics analyze the data collected from the tables. The researcher used the mean calculation and standard deviation.

Table 2. Respondents' Responses towards the Environmental Dimension

No.	Indicators	Mean	St.Deviation	Note
3	The water at the mangrove area is available	3.45	0.94	Agree
4	The water at the mangrove area is clean	3.41	0.81	Agree
5	Mangrove trees are dense to protect the shoreline from beach scrape	4.05	0.83	Agree
6	The mangrove forest is kept clean from waste	3.57	0.93	Agree
7	The river area is kept clean from waste	3.50	0.93	Agree
8	There is mangrove planting effort	4.23	0.72	Strongly Agree
9	The environment around mangrove forest is well-arranged	3.88	0.83	Agree
10	Mangrove area acts as a habitat for the wildlife	3.86	0.93	Agree
11	The parking lot is safe	4.04	0.68	Agree
12	The parking lot is comfortable	3.83	0.79	Agree
13	The meeting point is clean	3.84	0.76	Agree
14	The jogging track is clean	3.94	0.72	Agree
15	The gazebo is clean	3.86	0.77	Agree
16	The toilet is clean	3.76	0.79	Agree
17	The canteen is clean	4.02	0.68	Agree
Environmental Dimension Avg		3.82	0.77	Agree

The Environmental Dimension is a dimension that discusses all aspects found in the environment around KEMW, either natural resources and wildlife or the human-made resources, which perceived by KEMW visitors. Based on Table 2, the 8th indicator (there is mangrove planting effort) gets the highest mean score with a standard deviation of 0.72. This result means that respondents have seen the mangrove-

seedlings planting activity as an engaging activity. This dimension has fifteen indicators with a total mean score of agreement of 3.82. Table 2 also explains that the remaining fourteen indicators of the environmental dimension are perceived well by respondents. However, the mean score of the 2nd indicator (the water at the mangrove area is clean) is the lowest among the others.

Table 3. Respondents' Responses towards the Economic Dimension

No.	Indicators	Mean	St.Deviation	Note
18	The existence of mangrove ecotourism provides extensive employment opportunities for local workforce	3.96	0.76	Agree
19	The existence of mangrove ecotourism provides local people with opportunities to sell goods & services	4.08	0.72	Agree
20	Mangrove-fruit products sold at the tourist areas are products of local productions	3.74	0.80	Agree
21	The large number of food choices offered at tourist areas attracts visitors to buy	3.78	0.89	Agree
22	The large number of beverage choices offered at tourist areas attracts visitors to buy	3.78	0.83	Agree
23	The large number of local products offered at tourist areas attracts visitors to buy	3.70	0.83	Agree
Economic Dimension Average		3.84	0.81	Agree

The Economic Dimension is a dimension that discusses all aspects related to costs and benefits, the type of economy in tourism areas, and the multiplier effect as perceived by KEMW visitors. Table 3 shows the 19th indicator (the existence of mangrove ecotourism provides local people with opportunities to sell goods & services) gets the highest mean score with a standard deviation of 0.72. This outcome implies that respondents consider financial benefits for the residents as a result of KEMW existence. This dimension has six indicators with a total mean score of agreement of 3.84. Table 3 also explains that the other-five indicators have been perceived well by the respondents, remaining the 23rd indicator (The large number of local products offered at tourist areas attracts visitors to buy) as an indicator with the lowest score.

The Social Dimension is a dimension that discusses all aspects related to human interaction at KEMW that perceived by respondents as KEMW visitors, including equity and ethics values. Table 4 shows that the 28th indicator (Employees are polite towards visitors) gets the highest mean score with a standard deviation of 0.52. This fact indicates that respondents perceived that KEMW employees had

treated them politely. This dimension has five indicators with a total mean score of agreement of 3.86. Table 4 also shows that four other indicators have been perceived well by the respondents. The 24th indicator (Visitors with special needs receive special attention from employees) gets the lowest mean score compared to other indicators.

Table 4. Respondents' Responses towards the Social Dimension

No.	Indicators	Mean	St.Deviation	Note
24	Visitors with special needs receive special attention from employees	3.48	1.00	Agree
25	The price of mangrove products is at a reasonable price	3.76	0.65	Agree
26	The service fees offered is at a reasonable price	3.81	0.69	Agree
28	Employees are polite towards visitors	4.15	0.52	Agree
29	Visitors feel safe when visiting the mangrove ecosystem areas	4.11	0.65	Agree
Social Dimension Average		3.86	0.58	Agree

Researcher summarizes these three dimensions into Table 5, which shows the mean scores and standard deviations of the three dimensions of sustainable tourism at KEMW.

Table 5. Distribution of Perception for each Dimension

No.	Dimension	Mean	St.Deviation	Perception
1	Social	3.86	0.70	Agree
2	Economic	3.84	0.80	Agree
3	Environmental	3.82	0.81	Agree

From the summary above, the social dimension ranks highest with the largest mean score average. This comparison shows that KEMW visitors perceive the indicators related to their social life, particularly politeness and safety as like most indicators. The next rank is the economic dimension. The respondents highly appreciate the indicators about the opportunity to set up a business and work opportunities for residents around the KEMW. The environmental dimension occupies third place with an average mean score of 3.82. Even though it gets good perception, respondents see that the environmental dimension can be improved, especially indicators related to the availability and cleanliness of the water in the mangrove area.

5. Discussion

The result shows that KEMW has made efforts to implement sustainable tourism well. This finding strengthens Swarbrooke (1998) that both environment and social play an essential role in the development of sustainable tourism. The average mean scores of both the environmental and social dimensions have been

perceived well. As mentioned previously, the social dimension gets the highest average, which indicates that social factors at KEMW are like most by visitors. The environmental dimension which slightly lower than both the social and economic dimensions has been perceived well, too, although visitors declared that factors related to the environment could be improved. This finding happens because of the lack of visitors' environment awareness, for example, littering. This kind of attitude is contrary to the ideal of Belias et al. (2016) that sustainable tourism aims to protect the environment.

In line with the statement of Velissariou (2000) in Belias et al. (2016), the existence of KEMW has been considered by visitors to have promoted the local economy. Visitors have perceived the economic dimension with an average mean score of 3.84, which means the existence of KEMW is fit with the principle of sustainable tourism. KEMW has contributed to empowering the local economy.

The average scores of the environmental dimension indicators that received the highest rating belong to the mangrove planting activity, the density of the mangrove trees, parking lot safety, and the canteen cleanliness. It is not surprising when both mangrove planting activity and mangrove-tree density get a high average score. KEMW is opened to external parties involved in planting mangrove seedlings. Plenty of evidence shows the involvement of various agencies and schools that have carried out seeding activities. KEMW provides the seedlings, determines the location of the event, then visitors act under the direction of KEMW staff. This situation is in line with the statement of Wijayanti (2007) in Nurcahyawati et al. (2018) that the Wonorejo area is supportive of mangrove cultivation.

Indicators that get the lowest average score in the environmental dimension are indicators of toilet cleanliness, forest cleanliness, river cleanliness, water availability, and water cleanliness. Everything related to water and trash can be caused by the act of ignorant visitors, for example littering and misusing the toilet. However, it also possible that the water quality is not supportive. This phenomenon can influence how visitors perceive toilets, forests, rivers, and available water. Though the perceptions of those indicators still good, the average scores are lower than the other indicators' scores. Therefore, KEMW employees should clean up trash that is scattered more often. They can prevent the coming of trashes by educating visitors.

However, concerning the water availability indicator, it is often caused by the quality of the water from well. There is no clean water supply from the

government-owned water company (PDAM). For that reason, KEMW management should filter the water from well to obtain better water quality. Furthermore, KEMW management periodically must control facilities related to the water supply.

In the economic dimension, the higher average scores belong to the indicators about business and job opportunity for the local people. This fact is in line with the statement of Velissariou (2000) in Belias et al. (2016), i.e. sustainable tourism aims to promote local economic potential by providing goods and services. Whereas, the lower average scores belong to food choices, beverage choices, local home industries, and local products indicators. Indeed, visitors perceive indicators of food choices and beverage choices as good, but visitors still expect more options to offer.

Currently, there are food vendors who offer the same menu as other food vendors, even though there is a rule not to provide a similar list, but there are food vendors who refuse to obey. Therefore, vendors must creative to offer more varied menus to visitors. The canteen authorities may carry out random inspections to make sure everything goes well. Residents who process mangrove into other products such as soap, shampoo, drinks, therapeutic oils, scrubs, need help in attracting potential buyers through more frequent promotion events. Presently, visitors still rarely buy products made of the processed mangrove fruits. In addition to promotions, producers need help to figure out why visitors do not purchase mangrove products, whether the cause of the packaging, product quality, pricing, or other factors.

The higher average score of the social dimension indicators belongs to employees politeness and visitors' safety. This result means that visitors consider employees' courtesy also provide a sense of security for the visitors. Visitors feel safe when they are protected from nuisances and criminal acts like pickpocketing from other visitors and residences. Visitors do not experience what Poitras & Donald (2006) concerned about, i.e. the arrival of visitors and new developments in the local community environment can provide inconvenience between visitors and residents. Moreover, the local people get benefits from KEMW, so they give positive responses to visitors, and visitors feel safe.

The indicators of the social dimension that have lower scores than others are service pricing, product pricing, and people with a particular need. All three are parts of the equity sub-dimension. It can be seen that visitors assessed the prices by the service/product providers as reasonable (less than IDR 30,000). It is crucial to notice that the visitors' perception close to disagreeing. Therefore, the price of services/products should not rise.

Concerning indicators related to people with special needs at KEMW such as pregnant women, the elderly, toddlers, and people with disabilities, the average score is the lowest of all social dimension indicators. Indeed, there are no disability-friendly facilities at KEMW, such as the ramps for wheelchair access and handrails for the visually-impaired. To recognize equity which a part of sustainable tourism, KEMW may provide supporting facilities for people with special needs. It is a smart move to seek equity in tourism activities because it is wise to respect the rights of visitors who have limitations. Equity sub-dimension provides a sense of safety and comfort to all visitors equally and following the needs of each visitor.

Regarding the environmental dimension, KEMW management needs to make more proactive programs so that visitors' perceptions about the implementation of sustainable tourism at KEMW can be improved. Some examples follow. KEMW may clean up the river from trash more frequent, invite people of Surabaya to do so in the forest areas, install nets on the river to filter floating household waste, and filter the water from well.

In terms of the economic dimension, it is wise for sellers to be creative to offer more varied menus to visitors. KEMW management also needs to promote to attract potential visitors to buy products made of processed mangrove fruits. In addition to promotions, KEMW may help producers of local products to find out the cause of the lack of visitors' interest.

Regarding the social dimension, it is recommended that KEMW management provides easier access for visitors with special needs, such as ramps for visitors with wheelchairs, handrails for those who are visually-impaired, and seats that prioritized for elderly visitors.

Despite the insightful findings, this research also has some limitations. The study has more practical implications than theoretical contribution. Moreover, the analysis method used is in the form of quantitative descriptive only. Using a more sophisticated quantitative analysis and statistics tools will get more valuable information. This limitation can be improved by further research by either measuring the level of visitor satisfaction level towards either KEMW employees' services or identifying the impact of the presence of KEMW on the economic and social characteristics of the local population.

6. Conclusions

Visitors, according to their perception, agree on the implementation of sustainable tourism at KEMW, Surabaya, based on the environmental dimension. This

finding is supported by the indicator of mangrove planting activities that highly appreciated by respondents. The implementation of sustainable tourism in the environmental dimension at KEMW still prioritizes conservation goals. Visitor education is an important activity to prevent or at the very least, to minimize environmental damage by human beings, although it is still limited to large groups only.

The visitors' perception based on the economic dimension agrees to the implementation of sustainable tourism at KEMW. KEMW has provided economic benefits to the local population in various ways, such as by providing opportunities to sell products at KEMW, providing training and workshops, as well as recruiting local workforces.

The visitors' perception based on the social dimension agrees to the implementation of sustainable tourism at KEMW. KEMW has provided visitors with a sense of safety and comfort. This fact is supported by the presence of several respondents who revisited KEMW.

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