Perceptions of Visitors and Residents on Impact of Tourism Activities towards Quality of Water in Redang and Perhentian Islands, Malaysia

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Abstract
Tourism is one of the leading contributors to service industries in Malaysia and it is gradually growing. The growth of this industry brings impact towards the environment, specifically the water quality of islands. This study looks into the visitors’ and residents’ perceptions of the impacts of tourism towards the water quality of islands. A total number of 211 and 258 questionnaires were distributed to visitors of Redang and Perhentian Islands which are popular tourist destinations. Meanwhile, 188 residents from Redang and 183 from Perhentian were also distributed with the questionnaires. The results indicate that there is a high level of agreement for both visitors and residents regarding the quality of water of both islands are affected by tourism. There was significant difference on the level of agreement between the visitors and residents at Perhentian Island for items on sewage water and living things in the sea. Establish carrying capacity and embedding environmental education in sustainable tourism management would help to broaden the perception of visitors.

Key words: Visitors’, Residents, Tourism impacts, Water quality, Island

1. Introduction

Tourism industry is one of the largest service industries in Malaysia and it is growing continuously. In 2015, the country received 25.72 million tourists with the total revenue of MYR69.21 billion. (Ministry of Tourism Malaysia, 2016). The total revenue from tourism is expected to increase 4.1% per annum from the 2015 to 2025. The total revenue projected for the year 2025 is MYR95.9 billion which depicts a total nearly 2 billion per week. The total contribution of the tourism industry to Gross Domestic Product (GDP) stands at 5.6% (World Travel and Tourism Council, 2016). The tourism industry is a major contributor to the foreign exchange, employment, payment for imported goods while accumulating investments for new infrastructures (Bhattarcharya and Sankar, 2000; Lee and Chang, 2008; Lee, 2010; Lozano-Oyola et al 2012; Schubert et al, 2011).

The tourism industry has proven to be not only beneficial towards the economic and social well-being but it also contributes negative impacts towards a country (Bhattarcharya and Sankar, 2000; Castellani and Sala, 2010; Choi and Sirakaya, 2005; Gladstone et al, 2012). Tourism activities have been identified to have a major negative impact towards the environment (Arrow et al, 1995; Buckley, 2012; Choi and Sirakaya, 2005; Holden, 2009; Kilipiris and Zardava, 2012, Kim et al, 2012; Kostopoulou and Kyritis, 2012;Silva and Lopez, 2012; Simon et al, 2004). The impact of tourism activities towards the environment spreads in a variety of components. The components that are directly affected by tourism activities include ecological resources, natural sights, air, energy and water consumption, and natural resources (Arabatzis and Grigoroudis, 2009; Bhattarcharya and Sankar, 2000; Castellani and Sala, 2010; Choi and Sirakaya, 2005; Lei and Zhou, 2012, Kim et al, 2012; Song et al, 2012; Tang, 2011).

The effect of tourism activities toward the environment has frequently been the essence of discussion in environmental summits. Environmental impacts from tourism activities was first highlighted in the Brundtland Commission 1987 where it was mentioned that any development although sufficient to the need of the present should not endanger the need of the future (Kostopoulou and Kyritis, 2012). The next summit which brought forward the issue mitigating environmental impacts was the Rio Summit 1992 that introduced the concept of Local Agenda 21 (Cross et al, 2003).
Local Agenda 21 has identified various efforts from detailed tourism planning to the involvement of local community and visitors to ensure the sustainability of the environment due to tourism development. Torres-Delgado and Palomeque (2012) reviewed 16 summits or meetings that have included the concept of tourism that were more environmentally conscious. In recent development, the summit Rio+20 (UNWTO, 2012) discussed about the importance of protecting the environment throughout tourism development. In this summit, a report called ‘The Future We Want’ was produced. The report highlighted the involvement of the local community and the awareness of tourism as an important factor towards a tourism that considers the preservation of the environment for the future generation.

2. Literature Review

In accordance with the Local Agenda 21 and Rio 20+, Malaysia has also been moving towards establishing a tourism industry which is more environmentally conscious. Various studies have been conducted to explore further in the impacts of the tourism towards the environment. The studies on the water quality on island have been emphasized for the recent period of time. The studies conducted on the tourism industry have affected the water quality on island in various forms including the degradation of coastal areas, decrease groundwater quality and reduction in water resources (Fisher, 2007; Jalal et al, 2012; Mohd Sharif and Tahir, 2003; Praveena et al, 2010; Lee and Suriani Othman, 2010). However, it was also found that industrial, human and natural activities also contributed to the degradation water quality on islands (Jalal et al, 2010; Praveena et al, 2010).

Studies conducted on the perception of visitors and residents on the impacts of tourism towards the water quality on islands concluded similar outcomes. Residents agreed that tourism had positive impacts on their economical well being. However, they also agreed that the environment especially the water quality on islands was being affected by tourism (Fisher, 2007, Mapjabil et al, 2012; Mohd Sharif and Tahir, 2003). Fisher (2007), further concluded that water quality is important to the residents from the religious aspect. Residents who are majority Muslims, give immense importance to water due to its economic value. Where else, visitors concern towards the water quality is to ensure the sustainability of natural activities (Lee and Othman, 2010; Usman et al, 2012).

Impacts on the water quality especially on islands held valid importance in both the perceptions of visitors and residents. Hence, the objectives of this study would look to:

i. The level of agreement of visitors and residents on the impacts of tourism on the water quality of Redang and Perhentian Islands.

ii. The difference in the level of agreement of visitors and residents on the impacts of tourism on the water quality of Redang and Perhentian Islands.

3. Methodology

The main research method used was a quantitative design in the form of a survey. According to Best & Kahn (1998), a survey based on evaluation usually involves acquiring a desired or undesired result. In addition, the survey conducted in this research had two main purposes which were descriptive and explanatory (Taylor, 2007). The descriptive purpose of this study was to look at the level of agreement of the visitors and residents on the impacts of tourism on water quality. The explanatory purpose was to look at the difference between the level of agreement of the visitors and residents.

The most common instrument used to collect data in a survey is by using a questionnaire. The questionnaire that was used in this study consisted of questions on all the physical impacts of tourism on the environment. However, this study narrowed its scope to only the questions on water quality. A 5 point Likert scale was used to measure the level of agreement of the respondents on the water quality. Locations chosen for the study were Perhentian and Redang Islands. These islands were chosen as they are popular island destinations in Malaysia. Redang Island is believed to attract more than 8000 tourist per day during its peak season besides being recognized as one of the most beautiful islands on Peninsular Malaysia (Lim et al 2011, Jaafar and Mohideen, 2011). Perhentian Island has evolved into a major tourist attraction due to the development of world class facilities and scuba diving offerings (Usman et al, 2012; Majbapil et al, 2012 ).

A simple random sampling was applied to select and distribute the questionnaire. Data obtained was analysed using SPSS. The level of agreement for descriptive analysis is analysed by dividing the range of Likert scale (5-1=4) with 3. The range of the mean analysis are Low (1.00 – 2.33), Medium (2.33 – 3.67) and High (3.68 – 5.00). An independent sample t-test was conducted to analyse the difference of perception between visitors and residents.
4. Results and Discussion

A total number of 183 residents and 258 visitors from Perhentian were obtained as respondents whereas in Redang, 188 residents and 211 visitors were obtained as respondents. Although simple random sampling was applied, the visitors were varied. Perhentian had 134 domestic and 124 international visitors as respondents whereas Redang had 136 domestic and 75 international visitors as respondents. The residents varied in the type of occupation. Vargas-Sanchez et al (2011) included perception of visitors and residents as important variables in the model of explaining attitude towards tourism impacts. A descriptive analysis would allow the researcher to analyse the perception of visitors and residents.

Table 1: Descriptive Analysis of Visitors’ and Residents Perception in Redang and Perhentian Island on Water Quality

<table>
<thead>
<tr>
<th>Item</th>
<th>Visitors</th>
<th></th>
<th>Residents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Redang</td>
<td>Perhentian</td>
<td>Redang</td>
<td>Perhentian</td>
</tr>
<tr>
<td>Imperfectly treated sewage water from tourism premise affects water quality</td>
<td>3.99</td>
<td>0.884</td>
<td>3.94</td>
<td>0.960</td>
</tr>
<tr>
<td>Quality of water affected by water-based tourism activities</td>
<td>3.99</td>
<td>0.884</td>
<td>3.91</td>
<td>0.976</td>
</tr>
<tr>
<td>Living things in sea affected by water pollution</td>
<td>4.09</td>
<td>0.849</td>
<td>4.06</td>
<td>0.934</td>
</tr>
</tbody>
</table>

Table 1 shows a descriptive analysis of visitors’ and residents’ perceptions in Redang and Perhentian Islands on the impact of tourism activities on water quality. From the table, all items for visitors are in the range of high level agreement that water quality, living things in sea are affected by tourism activities and pollution from these activities. From the residents’ perception, the level of agreement was at a high level. However, the item that imperfectly treated sewage water from tourism premises affects water quality was at a moderate level.

The high level of agreement for nearly all items from both the visitors and residents is in accordance to model of Vargas-Sanchez et al (2011). This is due to the fact that they are important variables in explaining attitude towards the impacts of tourism towards the environment. The perception of visitors and residents on the negative impacts of tourism towards the environment has been the basis for planning and management of sustainable tourism development (Arabatzis and Grigoroudis, 2012; Frauman and Banks, 2011; Kim et al, 2012; Mohd Sharif and Tahir, 2003).

Visitors and residents have different motives for their perception on impacts of tourism towards the environments. Visitors perception are motivated by the depth of their memories, quality of experience and level of enjoyment (Arabatzis and Grigoroudis, 2012; Ballantyne et al, 2011). In contrast, residents are motivated by effects on their economic wellbeing and life satisfaction (Frauman and Banks, 2011; Kim et al, 2012). Despite the difference in motivation, both share a common concern towards mitigating tourism impacts towards the environment. A t-test analysis is conducted to analyse whether there is a difference between residents and visitors in their perception on water quality for Redang and Perhentian Islands.
Table 2: Difference of Visitors’ and Residents’ Perception on Water Quality For Redang and Perhentian Islands

<table>
<thead>
<tr>
<th>Item</th>
<th>Redang</th>
<th>Perhentian</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residents</td>
<td>Visitors</td>
</tr>
<tr>
<td>Imperfectly treated sewage water from tourism premise affects water quality</td>
<td>3.54</td>
<td>3.99</td>
</tr>
<tr>
<td>Quality of water affected by water-based tourism activities</td>
<td>3.86</td>
<td>3.99</td>
</tr>
<tr>
<td>Living things in sea affected by water pollution</td>
<td>3.86</td>
<td>4.09</td>
</tr>
</tbody>
</table>

**Significant at p<0.01

Table 2 shows t-test analysis of the perception difference on water quality between visitors and residents. The t-test indicates that there is a significant difference between visitors and residents on the perception of imperfectly treated sewage water from tourism premises and its effect on the living things in the sea. In both of these items, visitors have a higher level of agreement. The item on the quality of water affected by water-based activities in Perhentian and all items in Redang show no significant difference between residents and visitors. The t-test analysis which indicated a higher level of agreement for the visitors compared to residents might be contributed by their knowledge and learning on the environment. In a survey conducted by the Malaysia Science and Technology Information Center (2000), only 33% Malaysians showed interest in learning regarding the environmental pollution that is occurring in the country. This is lower than the interest shown by the other communities such as the European Community at 56%. The difference in the level of learning could a factor that contributes to the difference in perception between visitors and residents.

5. Conclusions and Recommendations

The high level of agreement of visitor and residents on water quality indicates that they are very keen in mitigating the impacts towards environment from tourism activities. Instilling visitors and residents with environmental education could be a step to bring out positive actions. Ballantyne et al (2011) believed that environmental education could be the bridge that helps to bring out a positive attitude from visitors towards the environment. Environmental education is also believed to bring out positive attitudes from residents as well (Kim et al, 2012; Tosun, 2000). There were a few items that indicated significant difference in perception on water quality between visitors and residents. This difference might be due to the different perception on the acceptable level of water quality. Carrying capacity could become a standard indicator of an acceptable level for both visitors and residents. Carrying capacity in tourism is the maximum number or threshold value which can be accepted or accommodated by a tourist destination while maintaining the satisfaction of visitors and residents with reference to a standard of quality (Bhattacharya and Shankar, 2000; Bimonte and Punzo, 2007; Kostopoulou and Kyritsis, 2006). Carrying capacity established in coastal areas would help to cope with environmental degradation.

As an overall conclusion, visitors and residents both have high level of agreement on tourism impacts on the water quality of the Redang and Perhentian Islands. Provision of environmental education could help bring out positive perceptions of the visitors and residents into positive and responsible attitudes However there were a few items where the visitors and residents differ in their level of agreement. Carrying capacity should be established in order for visitors and residents to recognize a standard acceptable level of environmental condition.
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