Journal of Modern Education Review, ISSN 2155-7993, USA
September 2016, Volume 6, No. 9, pp. 648–654
Doi: 10.15341/jmer(2155-7993)/09.06.2016/009

http://www.academicstar.us

A Study of Visitors' Perception on the Impacts of Tourism Activities, Development and Infrastructure on the Environment of Redang Island

Ahmad Masduki Bin Selamat, Murugadas A/L Ramdas Chelamuthu, Katherine Livan Kehing Binti Abdullah, Badaruddin Mohamed
(Politeknik Mukah, Malaysia)

Abstract: Tourism industry, being one of largest service industry in Malaysia has been continually growing and is expected to grow further with a 36 million tourist arrival and 168 billion in income per year by 2020. The purpose of this study is to analyze tourist perceptions impacts of tourism activities, development and infrastructure on the environment of Redang Island. Redang Island was chosen for the study as it is a popular island destination in Malaysia and is believed to attract more than 8000 tourist per day during its peak season besides being recognized as one of the most beautiful island in Peninsular Malaysia. A total number of 211 tourists from Redang Island were obtained as respondents.The main research method that was used is quantitative design in the form of a survey. The study found that tourists believe that tourism activities, development and infrastructure have a significant effect on the environment. This brings to the conclusion that the tourists are very much aware and concerned towards the effect of tourism on the environment. The study suggests that, instilling tourists with environmental education could be a step to bring out positive actions and it 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.

Key words: tourism industry, Malaysia, Redang Island

1. Introduction

Tourism industry is one of largest service industry in Malaysia and continually growing. In 2012, the country received 4 to 6 billion tourists per year and is the 9th most visited country in the world which receives an income of RM 1 billion from foreign tourist per week. The industry is expected to grow further with a 36 million tourist arrival and 168 billion in income per year by 2020 (Economic Transformation Plan, 2010).The tourism industry is a major contributor to the foreign exchange, employment, payment for imported input goods while accumulating investments for new infrastructures (Bhattarcharya & Sankar, 2000; Lee & Chang, 2008; Lee, 2010; Lozano-Oyola et al., 2012; Schubert et al., 2011). In the year 2005, the industry contributes key foreign exchange due to its contribution of 40 percent in the country's balance of payment (Ministry of Finance Malaysia, 2011).The tourism industry is targeted to raise total GNI contribution of RM67 billion to reach RM 104 billion by year 2020. Furthermore, the industry is targeting of employment offering opportunity amounted to 497,000 jobs (Economic Transformation Plan, 2010).

Ahmad Masduki Bin Selamat, Politeknik Mukah.

The tourism industry has proven to be not only beneficiary towards the economic and social well-being but also contribute towards negative impacts towards a country (Mohamed et al., 2000; Bhattarcharya & Sankar, 2000; Castellani & Sala, 2010; Choi & 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 & Sirakaya, 2005; Holden, 2009; Kilipiris & Zardava, 2012, Kim et al., 2012; Kostopoulou & Kyritsis, 2012; Silva & 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 & Grigoroudis, 2009; Bhattarcharya & Sankar, 2000; Castellani & Sala, 2010; Choi & Sirakaya, 2005; Lei & Zhou, 2012, Kim et al., 2012; Song et al., 2012; Tang, 2011). There is also an indication that tourists' behaviour plays an important part in aggravating the impact on the environment. In contrast, it was also found that tourists showed concern towards the environment to ensure the sustainability of natural activities (Lee & Othman, 2008; Aznie et al., 2012). However, there is no clear indication in recent studies whether the tourist have a clear perception towards the impact of tourism on the environment.

Hence, the aim of the study would be to analyse tourists' perceptions on the impacts of tourism activities, development and infrastructure on the environment of Redang Islands. The specific objectives of this study would be to analyse:

The level of agreement of tourists on the impacts of tourism activities, development and infrastructure on the environment of Redang Islands.

The difference in the level of agreement of tourists according to type of tourist and gender on the impacts of tourism activities, development and infrastructure of Redang Islands.

2. Method

The main research method that was used is 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 has two main purposes which are descriptive and explanatory (Taylor, 2007). The descriptive purpose of this study is to look at the level of agreement of the visitors and residents on the impacts of tourism on water quality. The explanatory purpose would be 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 consists of questions on all the physical impacts of tourism on the environment. A 5 point Likert scale was used to measure the level of agreement of the respondents. Location that was chosen for the study is Redang Island. This island was chosen as it is a popular island destination 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 island in Peninsular Malaysia (Lim et al., 2011; Jaafar & Mohideen, 2011).

A convenience sampling method was applied to distribute the questionnaire. Data obtained was analyzed using SPSS. The data collection was done during the peak season (July to October 2012) of tourist to ensure more samples are available. The researcher distributed and gave some time for the respondents to fill in the questionnaire to avoid incomplete questionnaires. A mean analysis was used to analyze the level of agreement of tourists. The level of agreement for descriptive analysis is analyzed by dividing the distribution of the data into

three equal percentiles. An independent sample t-test was conducted to analyze the difference of perception between tourists according to type of tourist and gender.

3. Findings

The reliability of each item in the instruments was measured using the Cronbach's Alpha Coefficient. The dimension of the questionnaire was calculated separately to facilitate clear understanding. The findings of reliability test were appended in the Table 1 for both of the variables.

Table 1 Reliability Coefficients for Variables

Variable	No. Of Items	Item Deleted	Cronbach Alpha
Tourism Activities and Development	18	-	0.929
Infrastructure Development	11	-	0.803

As a rule of thumb, values which were above 0.6 were considered acceptable and 0.8 is the most appropriate and acceptable stated by Pallant J. (2011). Based on the table appended the variables addressed in the questionnaire achieved a reliability of 0.8 and above to the fact that the items in the questionnaire are reliable.

A total number of 211 tourists from Redang Islands were obtained as respondents. Although convenience sampling was applied, the tourists varied in the types of tourists and gender. There were 136 (64.5%) local and 75 (35.5%) foreign tourists as respondents. From the samples, total number of 144 (68.2%) were male tourists and 67 (21.8%) were female tourists. Vargas-Sanchez et al (2008) included perception of tourist as an important variable in the model of explaining attitude towards tourism impacts. A descriptive analysis would allow the researcher to analyse the perception of tourists.

Table 2 Tourists Perception on Tourism Activities and Development Environmental Impacts

Level	Frequency	%
Low (< 3.61)	76	36.0
Moderate (3.62–3.89)	78	37.0
High (> 3.90)	52	27.0

The level of tourists' perception in Table 2 indicates that the total percentage of respondents with moderate and high level of agreement stands at 64%. This can be interpreted that a large number of tourists do agree that tourism activities and development have a significant impact on the physical environment of the island.

Overall, Table 3 shows that 16 out 18 items (88.9%) are at moderate level. Meanwhile, only item on water pollution has a high level of agreement. Where else, item on natural landscape indicate a low level of agreement.

The level of tourists perception in Table 4 indicates that the total percentage of respondents with moderate and high level of agreement stands at 67.8%. This can be interpreted that a large number tourists do agree that tourism infrastructure development have a significant impact on the environment of the island.

Overall, Table 5 shows that 8 out 11 items (88.9%) are at a high and moderate level. Meanwhile, items on materials used for building, effects of development on natural environment and tree cutting activities obtained low level of agreement.

Table 3 Descriptive Analysis for Perceptions of Tourist on Tourism Activities and Development Environmental Impact Items

Items	Mean	SD	Level
Tourism activities (camping and hiking/forest recreation) has effects on plants.	3.87	0.882	Moderate
Tourism activities (hotels/chalet service premises and camping) contributes to compilation of solid waste in the island which affects the plants.	3.81	1.029	Moderate
Disposal of solid and liquid waste from tourism activities (hotel/chalet premises) affects the plants.	3.90	0.886	Moderate
Tourism activities such as hiking/forest recreation and camping affects the surrounding land of the island.	3.62	0.894	Moderate
Development and tourism activities affects land's fertility.	3.51	0.938	Low
Tourism activities cause erosion to the rocks and beaches in the island.	3.48	1.006	Low
Land use for tourism development activities results in loss in forest areas (Deforestation).	3.72	0.928	Moderate
Land use for tourism development activities results loss in empty land.	3.76	0.936	Moderate
Improperly treated sewage waste from tourism premises affects the environment.	3.99	0.884	Moderate
The environment of the island is affected by water-based activities.	3.84	0.905	Moderate
Living things in sea are affected by water pollution.	4.09	0.849	High
Smoke released by vehicles and open burning affects the health and environment.	3.92	0.925	Moderate
Poor air quality affects tourism activities.	3.84	0.905	Moderate
Natural landscape in the island have changed compared to before.	3.58	1.036	Moderate
Natural landscape should not be sacrificed to develop accommodation premises and infrastructures because there is no implication to the environment.	2.70	1.167	Low
Tourism development causes congestion and changes the environment which affects tourism.	3.59	1.002	Moderate
Tourism activities and physical development affects the habitat of the wildlife in the island.	3.73	0.979	Moderate
Biodiversity of living things are affected by tourism activities (fishing and hunting)	3.76	0.962	Moderate

Table 4 Level of Tourists Perception on Infrastructure Development Impact

Level	Frequency	%
Low (< 3.72)	68	32.2
Moderate (3.73 – 4.00)	28	13.3
High (> 4.01)	115	54.5

Table 5 Descriptive Analysis for Perception of Tourist on Infrastructure Development Items

Items	Mean	SD	Level
Accommodation premises development and other tourism structural development should be controlled and monitored by authorities for sustainable development.	4.06	0.840	High
Tourism development effects the environment.	3.98	0.771	Moderate
Improper material [glass] used for buildings will cause greenhouse effect [global warming] to the environment.	3.81	0.848	Low
Tourism affects the upgrading of public facilities.	3.93	0.756	Moderate
Improper sewage and solid waste management will affect the island's tourism.	3.93	0.805	Moderate
Poor maintenance of public and tourist facilities will affect the island's tourism industry	4.01	0.775	High
Rural and small towns benefit from tourist activities and development.	3.94	0.838	Moderate
Restoration and conservation is important for the sustainability of the island destination [recycling, turtle reproduction, beach cleaning etc.	4.19	0.757	High
Tourism development effects the natural and manmade landscape in this island	3.90	0.752	Moderate
Development activities has "disturbed" the natural environment.	3.64	0.987	Low
Tree cutting activities should not be done to build tourist/residence facilities	2.73	1.181	Low

Table 6 shows the independent sample t-test analysis of the perception difference on variables between local and foreign tourists. The t-test indicates that there is significant difference between local and foreign tourists for both the variables. For both cases, foreign tourists have a higher level of agreement than local tourist.

Table 7 shows the independent sample t-test analysis of the perception difference on variables between male and female tourists. The t-test indicates that there is no significant difference between male and female tourists for both the variables.

Table 6 Difference in Perception between Local and Foreign Tourists

		Tourism Activities and Development	Infrastructure Development
Type of Tourist			
Domestic		3.7823	3.9532
Foreign		3.5933	3.6364
Mean Difference		0.1889	0.2988
Levene's Test	F	0.157	0.550
	Sig	0.692	0.459
	EVA[a]	√	√
T-test	T	2.064	4.360
	Df	209	209
	Sig	0.040	0.000
	SD[b]	√	√

*. Difference is significant at the 0.05 level [2-tailed].

[a]: Equal Variance Assumption; [b]: Significant Difference.

Table 7 Difference in Perception between Male and Female Tourists

		Tourism Activities and Development	Infrastructure Development
Gender			
Male		3.7207	3.8308
Female		3.7032	3.8250
Mean Difference		0.0175	0.0058
Levene's Test	F	2.014	7.427
	Sig	0.157	0.007
	EVA[a]	√	X
T-test	T	0.184	0.094
	Df	209	192.244
	Sig	0.854	0.937
	SD[b]	X	X

*. Difference is significant at the 0.05 level [2-tailed].

[a]: Equal Variance Assumption; [b]: Significant Difference.

4. Conclusion

The study derived from the various impacts that tourism activities has brought on the environment of islands. Tourist behavior play an important role in aggravating the impact on the environment. Past studies revealed that there was less focus in obtaining the perception of tourist on the impact brought to the environment. A survey using questionnaire was conducted to elicit the perception of tourist on the impacts of tourism on the environment.

Redang Island which is a popular island destination in Malaysia was chosen as the location of the study. From the results that was obtained, it can be concluded that tourists believe that tourism activities, development and infrastructure have a significant effect on the environment. This brings to the conclusion that the tourists are very much aware and concerned towards the effect of tourism on the environment.

5. Recommendation

As a recommendation, instilling tourists 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). 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 visitor and residents satisfaction with reference to a standard of quality (Bhattacharya & Shankar, 2000; Bimonte & Punzo, 2007; Kostopulou & Kyritsis, 2006). Carrying capacity established in coastal areas would help to cope with environmental degradation.

References

Arabatzis G. and Grigoroudis E. (2010). "Visitors' satisfaction, perceptions and gap analysis: The case of Dadia–Lefkimi–Souflion National Park", *Forest Policy and Economics*, Vol. 12, No. 3, pp. 163–172, doi: 10.1016/j.forpol.2009.09.008.

Arrow K., Bolin B., Costanza R., Dasgupta P., Folke C., Holling C. S. and Jansson B. O. et al. (1995). "Economic growth, carrying capacity and the environment", *Science*, Vol. 268, No. 5210, pp. 520–521, doi:10.1126/science.268.5210.520.

Ballantyne R., Packer J. and Sutherland L. A. (2011). "Visitors' memories of wildlife tourism: Implications for the design of powerful interpretive experiences", *Tourism Management*, Vol. 32, No. 4, pp. 770–779, doi: 10.1016/j.tourman.2010.06.012.

Best J. W. and Kahn J. V. (1998). *Research in Education*, New York, Prentice Hall.

Bimonte S. and Punzo L. F. (2007). "The evolutionary game between tourist and resident populations and tourist carrying capacity", *International Journal of Technology and Globalization*, Vol. 3, No. 1, p. 73, doi: 10.1504/IJTG.2007.012361.

Buckley R. (2012). "Sustainable tourism: Research and reality", *Annals of Tourism Research*, Vol. 39, No. 2, pp. 528–546, doi: 10.1016/j.annals.2012.02.003.

Castellani V. and Sala S. (2010). "Sustainable performance index for tourism policy development", *Tourism Management*, Vol. 31, No. 6, pp. 871–880, doi: 10.1016/j.tourman.2009.10.001.

Choi H. C. and Sirakaya E. (2006). "Sustainability indicators for managing community tourism", *Tourism Management*, Vol. 27, No. 6, pp. 1274–1289, doi: 10.1016/j.tourman.2005.05.018.

Cross G. H., Johnson J. E. and Wood-arendt A. E. (2003). *The Role of Outreach Education in Achieving*, UNEP.

Fisher J. B., Nawaz R., Fauzi R., Nawaz F., Said MdSadek E. S., AbdLatif Z. and Blackett M. (2008). "Balancing water, religion and tourism on Redang Island, Malaysia", *Environmental Research Letters*, Vol. 3, No. 2, pp. 024005, doi: 10.1088/1748-9326/3/2/024005.

Gladstone W., Curley B. and Shokri M. R. (2012). "Environmental impacts of tourism in the Gulf and the Red Sea", *Marine Pollution Bulletin*, doi: 10.1016/j.marpolbul.2012.09.017.

Holden A. (2009). "The environment-tourism nexus", *Annals of Tourism Research*, Vol. 36, No. 3, pp. 373–389, doi: 10.1016/j.annals.2008.10.009.

Jaafar Mastura and Maideen SitiAishah (2012). "Ecotourism-related products and activities and the economic sustainability of small and medium island chalets", *Tourism Management*, Vol. 33, No. 3, pp. 683–691, doi: 10.1016/j.tourman.2011.07.011.

Jalal K. C. A, Faizul H. N. N., Naim M. A., John B. A. and Kamaruzzaman B. Y. (2012). "Studies on water quality and pathogenic bacteria in coastal water Langkawi, Malaysia", *Journal of Environmental Biology*, Vol. 33, No. 4, pp. 831–835, available online at: http://www.ncbi.nlm.nih.gov/pubmed/23360015.

Kilipiris F. and Zardava S. (2012). "Developing sustainable tourism in a changing environment: issues for the tourism enterprises: Travel agencies and hospitality enterprises", *Procedia-Social and Behavioral Sciences*, Vol. 44, pp. 44–52, doi: 10.1016/j.sbspro.2012.05.003.

Kim K., Uysal M. and Sirgy M. J. (2012). "How does tourism in a community impact the quality of life of community residents?", *Tourism Management*, doi: 10.1016/j.tourman.2012.09.005.

Lee C. C. and Chang C. P. (2008). "Tourism development and economic growth: A closer look at panels", *Tourism Management*, Vol. 29, No. 1, pp. 180–192, doi: 10.1016/j.tourman.2007.02.013.

Lei K. and Zhou S. (2012). "Percapita resource consumption and resource carrying capacity: A comparison of the sustainability of 17 mainstream countries", *Energy Policy*, Vol. 42, pp. 603–612, doi: 10.1016/j.enpol.2011.12.030.

Lim H. S., Tan F., MatJafri M. Z. and Abdullah K. (2011). "Water quality study using oceans at imagery over Penang Island", in: *2011 IEEE International Conference on Imaging Systems and Techniques*, pp. 65–69, doi: 10.1109/IST.2011.5962224.

Lozano-Oyola M., Blancas F. J., González M. and Caballero R. (2012). "Sustainable tourism indicators as planning tools in cultural destinations", *Ecological Indicators*, Vol. 18, pp. 659–675. doi: 10.1016/j.ecolind.2012.01.014.

Malaysia, *Economic Transformation Plan: 2010.*

Malaysia, *New Economic Model:2010.*

Ministry of Science, Technology and Information (2000). "The public awareness of science and technology", Report, Percetakan Negara, Putrajaya.

Schubert S. F., Brida J. G. and Risso W. A. (2011). "The impacts of international tourism demand on economic growth of small economies dependent on tourism", *Tourism Management*, Vol. 32, No. 2, pp. 377–385, doi: 10.1016/j.tourman.2010.03.007.

Silva J. N. and Ghilardi-Lopes N. P. (2012). "Indicators of the impacts of tourism on hard-bottom benthic communities of Ilha do Cardoso State Park (Cananéia) and Sonho Beach (Itanhaém), two southern coastal areas of São Paulo State (Brazil)", *Ocean & Coastal Management*, Vol. 58, pp. 1–8, doi: 10.1016/j.ocecoaman.2011.12.009.

Simón F. J. G., Narangajavana Y. and Marqués D. P. (2004). "Carrying capacity in the tourism industry: A case study of Hengistbury Head", *Tourism Management*, Vol. 25, No. 2, pp. 275–283, doi: 10.1016/S0261-5177(03)00089-X.

Song H., Dwyer L., Li G. and Cao Z. (2012). "Tourism economics research: A review and assessment", *Annals of Tourism Research*, Vol. 39, No. 3, pp. 1653–1682, doi: 10.1016/j.annals.2012.05.023.

Tang Z., Shi C. B. and Liu Z. (2011). "Sustainable development of tourism industry in China under the low-carbon economy", *Energy Procedia*, Vol. 5, pp. 1303–1307, doi: 10.1016/j.egypro.2011.03.226.

Taylor B., Sinha G. and Ghoshal T. (2006). *Research Methodolgy*, New Delhi, Prentice Hall.

Teh L. and Cabanban A. S. (2007). "Planning for sustainable tourism in southern PulauBanggi: An assessment of biophysical conditions and their implications for future tourism development", *Journal of environmental management*, Vol. 85, No. 4, pp. 999–1008, doi: 10.1016/j.jenvman.2006.11.005.

Torres-Delgado A. and López Palomeque F. (2012). "The growth and spread of the concept of sustainable tourism: The contribution of institutional initiatives to tourism policy", *Tourism Management Perspectives*, Vol. 4, pp. 1–10, doi: 10.1016/j.tmp.2012.05.001.

Vargas-Sánchez A., Porras-Bueno N. and Plaza-Mejía M. D. L. Á. (2011). "Explaining residents' attitudes to tourism", *Annals of Tourism Research*, Vol. 38, No. 2, pp. 460–480, doi: 10.1016/j.annals.2010.10.004.

UNWTO (2012). "Turning one billion tourists into one billion".