

# Tourism Operator Sustainability Predictive Model in Marine Park

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## ABSTRACT

Sustainable tourism is the concept of visiting a place as a tourist and trying to make only a positive impact on the environment, society and economy. Tourism can involve primary transportation to the general location, local transportation, accommodations, entertainment, recreation, nourishment and shopping. In this context, the research study tourism is operator towards recreational. This study analyzed the sustainability tourism predictive model towards operator in marine park. The research addresses concentrating on four variables which are attractiveness, risks and hazards, maintenance and cleanliness and infrastructure. By using regression analysis, the result found that all four variables were predicted influences the sustainable tourism in marine park.

**Keywords:** Tourism, Operators, Sustainability

**JEL Classifications:** L83, Q55, Z32

## 1. INTRODUCTION

Maritime boundaries have created marine opportunity for Malaysia. Marine ecosystem that marine parks are a section of it has multiple functions. Primary attractions of ecotourism are flora, fauna and heritage that are destination of visitors. Marine parks in Malaysia can be attractive especially for ecotourism and international visitors. Table 1 shows that the trend of total tourist and visitors of marine park in Malaysia.

Tourism is a highly competitive industry, and tourism enterprise sector can no longer compete on the basis of cost alone. Quality is, therefore, a key element for the competitiveness of the tourism industry. It is also important for the sustainable tourism development of the industry and for creating and improving jobs. Therefore, promoting quality in tourism and tourist products is a priority in different tourism activities.

The reason why operator competencies is important:

- One of the tourism product that most important to attract the tourists

- There is the continuation of significant growth in tourism demand and the volume of tourism in tourist destinations, along with diverging developments in the various types of tourism.

Tourism is a service sector with a particularly complex product which depends on an extremely fragmented supply. Each link in the tourism value chain (travel agencies, tour operators, carriers, hoteliers, restaurateurs, etc.) offers one element in the overall product. Together, these components determine tourists' experiences and their appreciation of the quality of the service.

## 2. LITERATURE REVIEW

### 2.1. Attractiveness

The concept of destination attractiveness and its measurement have received much attention from tourism researchers, practitioners and policymakers. Some of these studies evaluate destination attractiveness by studying the inventory of existing destination resources and attractions (Formica and Uysal, 2006;

**Table 1: The trend of total tourist and visitors of marine park in Malaysia**

years	Tourist arrival (million)	Visitors of marine park Malaysia
2000	10.22	423,229
2001	12.78	484,121
2002	13.29	465,587
2003	10.58	381,072
2004	15.70	559,862
2005	16.43	429,880
2006	17.55	520,015
2007	20.97	477,682
2008	22.05	508,488
2009	23.65	530,758
2010	24.58	606,155
2011	24.71	584,934
2012	25.03	626,605
2013	25.72	793,359
2014	27.44	884,180
2015	25.70	822,498

Sources: Tourism Malaysia (2016) and Department of Marine Park Malaysia (2016)

Ferrario, 1979), others explore the perceptions that tourists have of destination resources and attractions (Hu and Ritchie, 1993; Kim, 1998; Ritchie and Zins, 1978).

The approach attractiveness (Gearing et al., 1974) are the criteria by which tourist attractiveness judge and employ the judgements of experts in making evaluation.

The criteria by which tourist attractiveness judge employ the judgements of experts in making evaluation aspect in recreational activities.

A site is considered by visitors within the larger context of a destination and is evaluated based on its tourism attractiveness (Castro et al., 2015). Tourism attractiveness has been utilized to understand visitors' decision making processes and is dependent on availability of attractions and associated perceived importance (Formica and Uysal, 2006).

## 2.2. Infrastructure

Tourism infrastructure is the basis of tourism development and utilization of existing destination resources. Tourism infrastructure includes a large number of services, necessary to meet the needs of tourists and increase satisfaction during their stay at the destination. Jovanović and Ilic (2016) suggests that future tourism development depends on intensive investment in infrastructure and its modernization, as an important factor of development of the tourism sector.

Thus, according to the Tourism and Transport Forum (Tourism & Transport Forum, 2012), tourism infrastructure is the supply chain of transport, social and environmental infrastructure collaborating at a regional level to create an attractive tourism destination.

Transport infrastructure - in this chain provides destination access to tourists from the international and domestic markets, and includes roads, airports, and railways.

Social infrastructure relates to accommodation facilities in the form of rooms to accommodate tourists and other supporting physical structures for various kinds of activities and services that attract tourists. This infrastructure includes hotels, convention centers, stadiums, galleries, and other necessary facilities.

Environment infrastructure - is a natural value, and refers to national parks, marine parks, and reserves which visitors can tour. In addition to these three types of infrastructure, tourism infrastructure includes the shared infrastructure, made of a network of regional, state, and national tourism organizations on the market where there is a tourist destination, and is engaged in the distribution of tourism products (Tourism & Transport Forum, 2012).

## 2.3. Cleanliness and Maintenance

The main attractions of marine parks are actually the natural resources themselves. The coral reefs, fishes, mangroves, coastal vegetation, beautiful beaches with clear blue waters, and the peaceful and harmonious condition of the islands. The combination of all these marine resources or the existence of one or two of them becomes the main tourist attraction.

Therefore, cleanliness and maintenance is chosen because we look the significant cleanliness and maintenance for the long-term impact to the tourists and operator.

## 2.4. Risk and Hazards

When offering quality service, it is imperative always to look on safety issues as having top priority. When dealing with tourists this becomes even more important. A clear and detailed plan for all business/service activities is necessary for every company working in the tourist industry, no matter what type of services they have on offer.

Safety equipment - here the service/goods in question are systematically analysed and assessed as to whether these could in some way constitute a risk, and if so how; what mishap could possibly occur, also how and where.

Procedure of the facilities - the safety plan the rules deal primarily with prevention; what work procedures should be used in order to minimise risk of accident.

Environment aspect - topography/geological hazards, present of dangerous/poisonous in organism.

## 3. METHODOLOGY

According to Creswell (2008), research design can be seen variety of purposes, such as exploratory research, descriptive research. As this study focuses on investigation of social phenomenon or behavior among tourists. A descriptive and inferential research becomes as the approach to provide detail about situation and social relationship.

Through a descriptive and inferential research, a survey investigation was attempt to describe the perception of tourists and operator's towards recreational in Tioman marine park. The

questionnaire was design to utilize in data collection through face-to-face. Thus, all measuring scales was measured by five point Likert scales ranging from 1 to 5.

A total of 200 self-administered questionnaire were distributed to tourist, of which 188 were returned, representing a response rate of 94%.

### 3.1. Recreational - Operator Perception

For the satisfaction, the respondents were asked to identify their satisfaction level from 1 to 5 Likert scale about the attractiveness, maintenance and cleanliness, infrastructure, risk and hazards. The result of satisfaction tourist is shown in Table 2. Besides, the respondent also were asked about the sustainability from the three perspective which are sustainable towards economy, social and environment.

## 4. RESULTS

### 4.1. Descriptive Analysis

The total of number respondents' responses in this study is the representative of those tourist from two side category who are Malaysian and non-Malaysian. A descriptive analyses on the respondent responses was first conducted in order to determine the actual number of respondent. The percentage of Malaysian respondents' respons is 95.2% and non-Malaysian is 4.8% (Table 3).

### 4.2. Correlation

Correlation is a bivariate analysis that measures the strengths of association between two variables. In statistics, the value of the correlation coefficient varies between +1 and -1. When the value of the correlation coefficient lies around  $\pm 1$ , then it is said to be a perfect degree of association between the two variables. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. Usually, in this research, we used Pearson correlation in order to investigate the relationship between sustainability with attractiveness, infrastructure, maintenance and cleanliness, risk and hazards (Table 4).

The result shows that variable sustainability have positive relationship with the attractiveness, cleanliness, infrastructure, and risks and hazards. The hypothesis that predicted a significant association between sustainability with the attractiveness, cleanliness, infrastructure, and risks and hazards ware supported.

### 4.3. Regression Analysis - Operator

The general purpose of multiple regression is to learn more about the relationship between attractiveness, infrastructure, maintenance and cleanliness, and risk and hazards with the sustainability based on operator perception.

#### 4.3.1. Model summary

R square value shows that at higher level ( $R^2 = 0.639$ ) in the explained variation in the state of tourist attraction towards sustainability. The result indicated that 63.0% of variation in the state sustainability was explained by the variables selected in the model such as maintenance and cleanliness, risk and hazards, infrastructure and attractiveness (Table 5).

**Table 2: Items used to measure attractiveness, maintenance and cleanliness, infrastructure risks and hazards and sustainability**

No.	Attractiveness	Mean $\pm$ SD
1	Is known as a famous holiday destination	4.36 $\pm$ 0.831
2	Good water quality	3.96 $\pm$ 0.906
3	Good air quality	4.23 $\pm$ 0.713
4	Local/traditional food	3.84 $\pm$ 0.838
5	The variety of activities are provided	3.89 $\pm$ 0.936
6	The beautiful of flora	4.27 $\pm$ 0.817
7	The variety of fauna	4.19 $\pm$ 0.757
8	The beautiful of view	4.39 $\pm$ 0.726
	Maintenance and cleanliness	
1	The overall surroundings of Tioman marine park is clean	3.75 $\pm$ 0.990
2	Staff concerned quality control	3.73 $\pm$ 0.875
3	Trash cans conveniently placed	3.72 $\pm$ 1.038
4	Pest not a problem	3.47 $\pm$ 1.125
5	Restroom well-maintained	3.36 $\pm$ 1.063
6	Clean ocean	4.04 $\pm$ 0.939
	Infrastructure	
1	Ease of access to tourist attractions	3.88 $\pm$ 0.946
2	More walk path are provides	3.76 $\pm$ 0.899
3	Services that are provided are flexible	3.65 $\pm$ 0.850
4	The price of transportation is reasonable	3.60 $\pm$ 0.947
5	The price of accommodation is reasonable	3.81 $\pm$ 0.807
6	Transportation in a good condition	3.72 $\pm$ 0.898
7	Pengangkutan berada dalam keadaan baik	3.72 $\pm$ 0.909
8	Standard infrastruktur is good	4.09 $\pm$ 0.812
	The facilities provided are good and cozy (diving, snorkeling, etc.)	
	Risks and hazards	
1	Safety equipment is good condition	4.01 $\pm$ 0.910
2	Procedure of the facilities is not strict	3.58 $\pm$ 0.953
3	High safety awareness among operator's	3.81 $\pm$ 0.960
4	Fast action taken when problem arise	3.76 $\pm$ 0.967
5	Competency training	3.84 $\pm$ 0.911
6	Announcement regulations are easy to understand (strong currents/wave notice, etc.)	3.78 $\pm$ 0.857
7	Topography/geological hazards	3.75 $\pm$ 0.853
8	Present of dangerous/poisonous organism	3.17 $\pm$ 1.125
	Sustainability	
1	Price are expensive in marine park	3.69 $\pm$ 1.129
2	Enough space for different activities	3.73 $\pm$ 0.905
3	Tourism provide a source of income for the locals	4.27 $\pm$ 0.812
4	Tourism has the potential to increase the income local entrepreneurs	4.18 $\pm$ 0.794
5	My current business has the potential for the new market	3.91 $\pm$ 0.801
6	Tourism provide job opportunities to locals	4.16 $\pm$ 0.840
7	No sosial problem	3.059 $\pm$ 1.237
8	Not depressed with surrounding communities	3.553 $\pm$ 0.999
9	Not distracted by other operator's	3.697 $\pm$ 0.953
10	The programs in marine park compatible with the visitor	3.920 $\pm$ 0.907
11	The existing socio-cultural is maintained	3.729 $\pm$ 0.928
12	Local people have a positive view towards operator	3.798 $\pm$ 0.891
13	Climate-temperature, rains, days of sunshine constantly	3.78 $\pm$ 0.874

(Contd...)

**Table 2: (Continued)**

No.	Attractiveness	Mean±SD
14	Natural beauty is maintained (landforms, hills, rocks, gorges, terrain, etc.)	3.95±0.790
15	Water is good quality (lakes, ponds, rivers, waterfall, springs, etc.)	3.71±0.949
16	The beautiful of flora and fauna are maintained (beaches, wildlife, islands, etc.)	3.98±0.877
17	No pollution	3.45±1.066
18	Level of noise are low	3.82±0.930

SD: Standard deviation

**Table 3: The number of samples and respondents replied**

Nationality	Number of respondents	
	Frequency	(%)
Malaysian	179	(95.2)
Non-Malaysian	9	(4.8)
Total	188	(100)

#### 4.3.2. Regression model

The findings that all independents (e.g., attractiveness, risk and hazards, infrastructure, maintenance and cleanliness) that were significant toward the sustainability. Consequently, the result indicated that the beta value of infrastructure and maintenance and cleanliness, risk and hazards were 0.211, 0.239 and 0.171 respectively with a significant value of 0.001, 0.001 and 0.005 with  $\alpha$  level at 1%. Meanwhile, the beta value of attractiveness towards sustainability was 0.156 and significant value 0.013 with  $\alpha$  level at 5% (Table 6).

The relationship was regressed using the following regression equation:

$$Y = a_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4$$

Where,

Y = Sustainability

$a_0$  = Intercept.

$a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4$  = Linear effect of attractiveness, risk and hazards, infrastructure, and maintenance and cleanliness.

Therefore,

$$Y = 0.845 + 0.156 \text{ Att} + 0.211 \text{ clean} + 0.239 \text{ inf} + 0.171 \text{ risk.}$$

## 5. DISCUSSION AND CONCLUSION

According to this research findings, attractiveness has a significant relationship between attractiveness and sustainability. Therefore, hypotheses is supported. This implies that sustainability is affected by the attractiveness.

Attractiveness is known as the one of the main factor towards sustainability. Based on Lee et al., (2010) stated that that the uniqueness of landscapes and scenery and special climate phenomena are two of the most important attributes determining the attractiveness for the recreation tourism. Clearly, the beautiful of flora (e.g., coral reef, mangrove, cave, seagrass, etc.) can be one

of the attractiveness that can attract the tourist to come at marine park. Based on the result descriptive analysis, snorkelling is the main favourite activity for tourist.

In marine park, there are gallery which exhibit marine life replica. Therefore, the government need to change from replica marine life to real marine life to give the tourist the real feelings the underwater world. Besides, special tourist attraction such as, bird watching, fishing, jungle trekking, etc., need to pay attention as well as the beautiful of view in Tioman marine park and so on.

In relation with this hypotheses, the result reveals that there is a significant relationship between infrastructure and sustainability. This result is consistent with the result of Jovanović and Ilic (2016) that sustainability is affected by the infrastructure. These findings support the current findings that infrastructure has significantly influence sustainability towards tourist in marine park.

While the infrastructure play the one of the main role towards the sustainability, the government should pay the attention to improve the quality of infrastructure. The issue of the infrastructure is more important for the tourist and operator because it is linked with the improvement of their standards of life. In fact, for some issues, such as sea and air transportation from jetty and to marine park, their assessment is lower positive satisfaction. Those responsible for the island's tourist development should seriously take into account that improving the quality of life of the local population is something which is inextricably connected to the quality of the services which are provided to the tourists. It is also something which should be seen as a reciprocal obligation of the state to the inhabitants of the island.

The result shows that there is a significant relationship between risk and hazards with sustainability. This result is consistent with Trenouth et al. (2012) that sustainability is affected by the risk and hazards. The concept of "risk and hazards" was applied in this research due to the relevant for the tourist because perceived risk and hazard safety influences the tourist in satisfaction marine park. Risk and hazards studies predominantly sought to identify the level of protection towards tourist. Overall result for risk and hazard shows that announcement information are easy to understand is still low. Meanwhile the result also shows that less enforcement officers visit at risk place.

With regards to sustainability in the face of risk and hazards, a community must balance the needs of its tourist especially in safety level for tourist. For instance, more surveillance need to increase from time to time. If the risk and hazards not intensified, the significant social consequences of risk and hazards that contributes to the reduction of overall tourist sustainability including loss of security, severe stress and anxiety, diminished trust in government, and disruption of environments.

According to this research findings, maintenance and cleanliness has a significant relationship between maintenance and cleanliness and sustainability. Therefore, hypotheses is supported. This implies that sustainability is affected by the maintenance and cleanliness.

The opinion of the operator with regard to the maintenance and cleanliness is slightly satisfy and a similar view is also held by the

**Table 4: Correlation**

Variables	Attractiveness	Cleanliness	Infrastructure	Risks and hazards	Sustainability
Attractiveness	1				
Cleanliness	0.560**	1			
Infrastructure	0.544**	0.751**	1		
Risks and hazards	0.476**	0.671**	0.716**	1	
Sustainability	0.564**	0.722**	0.730**	0.675**	1

\*\* indicates statistical significance at 5%.

**Table 5: Model summary**

R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard error of the estimate
0.799*	0.639***	0.630	0.30631

\* and \*\*\* indicate statistical significance at 1% and 10%.

**Table 6: Regression model**

Variables	Unstandardized coefficients		Standardized coefficients beta	t	Significant
	B	SE			
Constant	0.845	0.219		3.852	0.000
Attractiveness	0.156	0.062	0.151	2.514	0.013
cleanliness	0.211	0.059	0.280	3.549	0.001
infrastructure	0.239	0.068	0.288	3.490	0.001
Risk and hazards	0.171	0.060	0.209	2.878	0.005

SE: Standard error

tourists. Both operator and tourist have a lower perception about the restroom well-maintained at marine park.

Regarding about the issue maintenance and cleanliness, government should be take serious especially the cleanliness towards the ocean from oil and the overall surroundings of marine park. Besides that, environmental and economic performances is more positive, thus making improvements in sustainability more likely. Therefore, with regard to strategy choices, investment decisions and operations management should be discuss to improve maintenance and cleanliness from time to time.

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## REFERENCES

- Castro, E.V.D., Souza, T.B., Thapa, B. (2015), Determinants of tourism attractiveness in the National parks of Brazil. Parks, 21(2), 51-62.
- Creswell, J.W. (2008), Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Upper Saddle River, NJ: Pearson Prentice Hall.
- Department of Marine Park. (2016). Retrieved from [http://www.dmpm.nre.gov.my/data\\_pelawat.html?uweb=jtl](http://www.dmpm.nre.gov.my/data_pelawat.html?uweb=jtl).
- Ferrario, F.F. (1979), The evaluation of tourist resources: An applied methodology. Journal of Travel Research, 17(3), 18-22.
- Formica, S., Uysal, M. (2006), Destination attractiveness based on supply and demand evaluations: An analytical framework. Journal of Travel Research, 44(4), 418-430.
- Gearing, C.E., Swart, W.W., Var, T. (1974), Establishing a measure of touristic attractiveness. Journal of Travel Research, 12(4), 1-8.
- Hu,Y., Ritchie, J.R.B. (1993), Measuring destination attractiveness: A contextual approach. Journal of Travel Research, 32(2), 25-34.
- Jovanović, S., Ilic, I. (2016), Infrastructure as important determinant of tourism development in the countries of Southeast Europe. EcoForum, 5(1), 288-294.
- Kim, H.B. (1998), Perceived attractiveness of Korean destinations. Annals of Tourism Research, 25(2), 340-361.
- Lee, C.F., Huang, H.I., Yeh, H.R. (2010), Developing an evaluation model for destination attractiveness: Sustainable forest recreation tourism in Taiwan. Journal of Sustainable Tourism, 18(6), 811-828.
- Ritchie, J.R.B., Zins,M. (1978), Culture as determinant of the attractiveness of a tourism regions. Annals of Tourism Research, 5(2), 252-267.
- Trenouth, A.L., Harte, C., de Heer, C.P., Dewan, K., Grage, A., Primo, C., Campbell, M.L. (2012), Public perception of marine and coastal protected areas in Tasmania, Australia: Importance, management and hazards. Ocean and Coastal Management, 67, 19-29.
- Tourism and Transport Forum (TTF) (2012), Tourism Infrastructure Policy and Priorities, <http://www.ttf.org.au/Content/infprio20112.aspx>.
- Tourism Malaysia. (2016). Retrieved from <http://www.tourism.gov.my/statistics>.