

Measurement of Tourists' Satisfaction in Lake Kenyir of Malaysia

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Abstract | The evaluation of tourist satisfaction is important for ensuring long-term survival in the competitive business environment. This study aimed to measure the tourists' satisfaction in Lake Kenyir, Malaysia from the perception of tourists. The study followed a non-probability convenience sampling technique for the sample selection and interviewed a total of 320 tourists from the study area for primary data collection. Respondents' perception had been studied with 39 statements under seven dimensions of service quality and a generalized linear regression modeling technique was applied to evaluate the respective contribution of the observed dimensions with tourists' satisfaction. Results revealed that responsiveness, tangibles, assurance, empathy, and price dimensions have statistically significantly related to tourists' satisfaction. Moreover, communication and environment dimensions do not have a significant contribution to tourists' satisfaction. Various steps should be taken for increasing tourists' satisfaction in Lake Kenyir such as, maintain sustainability and environmental quality, increase facilities, effective marketing.

Keywords | Lake Kenyir, Malaysia, Satisfaction, Service quality, Tourist

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1. Introduction

The successes and future survival of any tourism site depend on tourists' long-term satisfaction. So, satisfaction is important for tourism sites (Yuksel & Yuksel, 2002). Satisfied tourists' can affect the long-term capability of a tourist site by repeat visits and positive intentions (Walker, 1995). The measurement of tourists' satisfaction depends on some exiting factors related to tourism activities. These are integrity, heterogeneity, tourist product quality, depreciation of tourism destinations with time frame, and uncertainty (Bowen & Clarke, 2002). Chhetri et al. (2004) found that tourist emotions, feelings, and moods are influenced in their satisfaction towards nature-based attractions. They conducted a study on Grampians National Park in Western Victoria, Australia to identify the underlying dimensions of visitor satisfaction. Tourist satisfaction depends on meeting their expectation in the attraction (Albaity and Melhem, 2017), recreational qualities, facilities, and services (Martin et al. 2019). Again, satisfaction is promoting the tourists to revisit the attractions (Castellanos-Verdugo et al. 2016). Eid et al. (2019) emphasized the relationship between attraction attributes, image, tourist satisfaction, and intention to recommend. Tourists recommend to others for visiting an attraction when they are satisfied due to service attributes and image of attractions. Chen and Gursoy (2001) found that tourists' may wish to experience a new attraction if they were satisfied with the previous attraction. The study was conducted in South Korea to investigate the relationship between tourists' destination loyalty and their preferences. The study shows that Korean tourists are influenced by cultural differences, convenient transport, and safety to choice destinations. Farsani et al. (2019) have identified tourists' satisfaction and motivation for geo-tours in Iran. The study revealed that tourists are willing to discover unique attractions to gather new experiences and participate in natural and en-

vironmentally friendly activities.

There are several previous studies (Mehmetoglu, 2005; Daniels and Marion, 2006; Moore and Polley, 2007; Wang et al, 2012) have shown that tourists' satisfaction depends on different attributes in the nature-based attractions. Daniels and Marion (2006) revealed through their study on the Appalachian Trail in the USA that natural beauties and ecosystems can attract tourists'. Moore and Polley (2007) addressed that natural beauties and bio-diversity of attractions are the satisfaction attributes for tourists'. The finding has identified through a study on the Cape Range National Park in Australia. Mehmetoglu (2005) pointed out that natural beauties play an important role in satisfying tourists at ecotourism destinations. The finding comes through a study at two nature-based attractions located in Northern Norway. Moreover, Wang et al (2012) identified through a study on wetland parks in China that the natural environment and recreational facilities are attracting tourists' towards the nature-based tourism sites. Lie et al. (2013) revealed through their study on nature reserves in China that, experience gathering opportunity, nature, and landscape influence the tourists' to take their travel decision in tourism sites. Mao et al. (2020) emphasized pollution-free tourism activities, sustainable use of natural resources, and protection of the biodiversity in nature-based attractions to attract tourists.

The service qualities are important attributes to attract tourists towards the attractions. Lynch et al. (2011) identified that physical activity, adequate information on sites, knowledge gathering experiences, and sustainable uses of resources attract the tourists towards tourism sites. Teixeira (2019) pointed out that innovation, customer needs, marketing efficiency, and skilled human resources are important attributes to attract tourists. Ramazanov et al. (2019) addressed that poor infrastructure, lower quality services, lack of skilled staff, high prices, and inadequate marketing are the main obstacles to attract tourists to attracti-

ons. Ghasemi (2019) argued that service quality influences the tourists' satisfaction and their willingness to recommend the attractions to others. Oliveri et al. (2019) emphasized consumption experiences for measuring tourist satisfaction. The consumption experiences related to positive and negative attributes tend to satisfaction for tourist services. Guo et al. (2017) pointed out that tourist satisfaction evaluates based on the perception of tourists on several attributes of attractions like consumption experiences and quality of services, and the natural environment. Kang et al. (2019) argued that tourists give priority to several aspects for their satisfaction. These aspects are information regarding resource uses, attraction management, entry fee, tourism product design, and limited impacts on ecology. Prayag et al. (2017) highlight the perception of tourists on facilities, uniqueness of attractions, and other service-related attributes of attraction to evaluate their satisfaction. Han and Hyun (2017) argued that service quality, price, and environment influence the perception of tourists towards attractions. Hanks et al. (2017) identified that several attributes like responsiveness, observation of staff, empathy, service level, and price make the differences in the perception of tourists.

There are several studies (Rahman et al., 2010; Yusof & Rahman, 2011; Yusof et al., 2012; Said et al., 2013) have been conducted in Malaysia to measure tourists' satisfaction in nature-based sites. Rahman et al. (2010) identified that good service quality brings tourist satisfaction towards attraction. They identify the finding through a study in Lake Kenyir that used a survey on tourists for sustainability, tangible, reliability, responsiveness, assurance, and empathy attributes. The study identified that the level of service quality is low according to tourists' perception which leads to dissatisfaction. Yusof and Rahman (2011) measured tourist satisfaction based on service quality in Lake Kenyir, Malaysia. The study measured tourists' perception of six attributes namely sustain-

ability, tangible, reliability, responsiveness, assurance, and empathy. The study shows that tourists are generally satisfied with products, services, visual and natural beauties in Lake Kenyir. Yusof et al. (2012) revealed that tourists' dissatisfaction in the same attraction due to poor service quality in sustainability, tangible, reliability, responsiveness, assurance, and empathy. The study showed tourist satisfaction depends on adopting environment-friendly practices such as recycling, coordinating with local culture and environment, and ensuring minimal changes in existing landform. Said et al. (2013) address the deficiency of service quality in ecotourism sites to enhance tourists' experiences and satisfaction. The study was conducted at the Niah National Park in Sarawak to measure visitors' expectations and perceptions on service quality based on six dimensions namely eco-tangibles, assurance, reliability, responsiveness, empathy, and tangibles. The study shows visitors' expectations not meeting in this destination due to negative service gaps.

Lake Kenyir is becoming a popular nature-based attraction in Terengganu for providing recreational opportunities and tourism activities. The main tourism elements of this site are natural and environmental attractions, educational and cultural experiences for tourists, conservation and ecological adventure, and local people's active involvement in tourism activities. The measurement of tourists' satisfaction in Lake Kenyir can identify the strong and weak attributes of this tourism site and give efforts to improve the service quality.

The previous studies (Chhetri et al., 2004; Al-baity and Melhem, 2017; Martin et al., 2019; Eid et al., 2019; Farsani et al., 2019) addressed tourists' perception of their expectation, recreational qualities, positive intention, motivation, experience gathering, and image to measure the satisfaction. Several studies emphasized different physical attributes of attraction like natural beauties (Daniels and Marion, 2006), ecosystem and biodiversity (Moore and Polley, 2007), natural environ-

ment (Wang et al., 2012), and pollution and sustainability (Mao et al., 2020). Again, some studies (Prayag et al., 2017; Han and Hyun, 2017; Ramazanov et al., 2019; Ghasemi, 2019; Oliveri et al., 2019) emphasized different service-related attributes like activities, information, service qualities, price, staff responsiveness, marketing and communication, and consumption experiences to evaluate the satisfaction of tourist.

Tourists' satisfaction has been identified in Malaysia from different perspectives. Some studies (Rahman et al., 2010; Yusof & Rahman 2011; Yusof et al., 2012; Said et al., 2013) emphasized the perspective of tangible, reliability, empathy, responsiveness, assurance, and sustainability. Other studies (Yacob et al., 2009; Muhamad et al., 2012; Salleh et al., 2012) determined tourist satisfac-

tion from other aspects such as ecological management, recreational activities, conservation change, and environmental preservation. But, the tourists' satisfaction must be measured from the wider dimensions so that the shortcoming of features has been identified to provide necessary efforts. So, it is necessary to consider the previous local and global studies contexts to include the necessary dimensions for measuring tourists' satisfaction. The present study measures the tourists' satisfaction in Lake Kenyir from the tourists' perception based on several related dimensions of service quality such as responsiveness, tangibles, assurance, empathy, communication, price, and environment. A brief description of the considered variables and related dimensions discussed in the existing literature can be observed in Table 1.

Table 1 | Related variables under dimensions

Dimension	Variables	References
Responsiveness	Staff are cordial and helpful, staffs are knowledgeable and easily identified, tourists are free to explore, open time of attraction	Naidoo et al., 2011
	Staff provide the necessary information, tourists welcome by the staff	Lynch et al., 2011
Tangible	cleaning and keeping facilities, showing direction signs, maintaining attractions, attraction unspoiled and uncrowded	Lepper and Schroenn, 2010
	developing information centers in the attraction	Ziegler et al., 2012
Price	Price for entry and services	Kang et al., 2019
	Site offer value for money	Hein, 2011
Communication	materials of attraction, brochures, the necessity for tour guides	Ziegler et al., 2012; Lynch et al., 2011
	Information for sustainable use of attraction	Mao et al., 2020
Assurance	Safety of attractions, moving, and parking facilities of the attractions	Liu et al., 2013
	Accessibility of attractions	Alegrea and Garaua, 2010
Empathy	Physical facilities of tourism sites, attention to tourists' needs, comfort, and sightseeing facilities	Orlovic-Lovren, 2011; Wang et al., 2012
	Sufficient toilets, prayer rooms for the tourists	Martin et al., 2019
Environment	Flora and fauna	Chen, 2011
	Uniqueness, variety of species, the landscape of the site	Liu et al., 2013
	Knowledge gather opportunity	Bruvere et al., 2011
	Pollution-free environment	Logar, 2010
	Physical attractions, attractive environment	Mao et al., 2020

2. Theoretical Framework

In tourism researches, most of the tourist satisfaction studies have used expectation-disconfirmation theory (Oliver, 1980) and the perceived-performance model (Tse and Wilton, 1988) to measure tourists' satisfaction. The expectation-disconfirmation theory model argued

that satisfaction depends on tourists' expectations and intentions. The theory is evaluated the comparison of tourists' expectations and their received experiences of tourism places (Oliver, 1980). The perceived-performance model has evaluated tourists' satisfaction and dissatisfaction based on examining the performance of tourism sites. The model argued that the tourists' are satisfied when

tourism sites provide them quality services (Tse & Wilton, 1988).

Some other scholars (Frochot, 2003; Akama & Kieti, 2003; Naidoo et al., 2011) also measured tourists' satisfaction from their perspectives. Frochot (2003) used five dimensions- responsiveness, tangible, communication, consumable, and empathy for measuring tourists' satisfaction in French. Akama and Kieti (2003) have used seven dimensions- price, perceived value, tangibles, reliability, assurance, empathy, and responsibility to measure tourist satisfaction in the National Parks of Kenya. Moreover, Naidoo et al. (2011) measured tourist satisfaction based on seven dimensions namely: responsiveness, tangible, price, communication, assurance, empathy, and environment for measuring overall service quality in nature-based tourism sites in Mauritius. The study aimed to identify the important attributes for tourist satisfaction in nature-based attractions. The study re-

commended that it is important to measure weak attributes of tourist satisfaction to readdress them for long-term survival.

The previous studies on tourist satisfaction in Malaysia and globally have used several dimensions based on their perspectives. But, the inclusion of wider dimensions helps to identify the actual performance of the tourism site. The present study attempted to analyze tourist satisfaction based on the seven dimensions which are included from the study of Naidoo et al. (2011) due to consider the wider contexts as well as address the necessary attributes. The included dimensions are responsiveness, tangible, price, communication, assurance, empathy, and environment. The dimensions are consisting of several statements that are incorporated from the studies of Akama and Kieti (2003), Frochot (2003), and Naidoo et al. (2011). Figure 1 shows the relational aspects of the seven dimensions of tourists' satisfaction.



Figure 1 | Tourists' satisfaction and related seven dimensions
Source: Adapted from Naidoo et al. (2011)

Moreover, other attributes also attract the tourists to visit a tourism site such as interpretative services (Kim et al., 2011), recreational qualities, and services (Martin et al. 2019). Furthermore, tourists' are interested to further visit a tourism site and refer the site to others when they gather

satisfying experiences (Alegrea & Garaua, 2010; Castellanos-Verdugo et al. 2016; Liu et al., 2013). The present study considered four different statements to calculate the variable "satisfaction of tourists" viz. "Satisfied with interpretative service", "Satisfied with interpreter service", "Satisfied with

whole recreational quality” and “Interested to visit this place again”.

Responsiveness: The tourists are satisfied when they are cordially received by the staff, free to explore, staffs are knowledgeable and easily identified, and open time of attraction is acceptable (Naidoo et al. 2011). They are satisfied with the facilities and the necessary information provided by the staff (Lynch et al., 2011). The previous studies (Rahman et al. 2010; Yusof and Rahman 2011; Yusof et al. 2012; Said et al. 2013) revealed that responsiveness is an important dimension for tourist satisfaction.

Tangible: This dimension highlights the natural attractions and equipment of the tourism sites. The dimension includes site cleaning and keeping facilities, showing direction signs, maintaining attractions, and developing information centers in the attraction (Lepper and Schroenn, 2010; Ziegler et al., 2012). Several previous studies (Rahman et al. 2010; Yusof & Rahman 2011; Naidoo et al., 2011; Yusof et al. 2012; Said et al. 2013) emphasized on tangible dimension to identify tourist satisfaction.

Price: The dimension relates to the entry price, value for money, and prices of service at the site. This dimension positively affects the well-being of the local economy (Spangenberg & Settele, 2010; Hein, 2011). The study of Han and Hyun (2017) on tourist satisfaction in physical environment service and Kang et al. (2019) on tourist satisfaction in forest parks identified that price for entry and services have influenced the perception of tourists towards nature-based attractions.

Communication: This dimension includes the statements on print and electronic materials of attraction, brochures, the necessity for tour guides ((Ziegler et al., 2012; Lynch et al., 2011), and in-

formation for sustainable use of attraction (Kang et al., 2019; Mao et al., 2020). The previous studies (Prayag et al., 2017; Han & Hyun, 2017; Ramazanov et al., 2019; Ghasemi, 2019; Oliveri et al. 2019) emphasized on communication dimension to evaluate the satisfaction of tourist.

Assurance: This dimension highlights the safety and accessibility of attractions, moving, and parking facilities of the attractions (Alegrea & Garaua, 2010; Liu et al., 2013). Some studies (Rahman et al. 2010; Yusof & Rahman 2011; Yusof et al. 2012; Said et al. 2013) revealed that the assurance dimension influences the tourists' satisfaction.

Empathy: This dimension is related to the physical facilities of tourism sites, attention to tourists' needs, comfort, and sightseeing facilities (Orlovic-Lovren, 2011; Wang et al., 2012). This dimension also highlights the other facilities like sufficient toilets, prayer rooms for the tourists (Martin et al., 2019). The study of Yusof et al. (2012) and Said et al. (2013) argued that empathy is a potential dimension to measure tourist satisfaction in Malaysia.

Environment: This dimension highlights the environmental aspects of the tourism site. Several environmental related items such as flora and fauna (Chen, 2011), pollution-free environment (Logar, 2010; Dawson et al., 2010), knowledge gather opportunity (Bruyere et al., 2011), uniqueness, variety of species, the landscape of the site (Liu et al., 2013) are included in this dimension. Several studies (Daniels and Marion, 2006; Moore and Polley, 2007; Wang et al, 2012; Mao et al., 2020) emphasized the environmental dimension to evaluate tourist satisfaction in any attractions.

The study attempts to investigate the contribution of the above dimensions of service quality that may affect the satisfaction of tourists. The

postulated hypothesis can be stated as,

H1: The tourism-related dimensions of service quality have a significant influence on visitors' satisfaction in Kenyir, Malaysia.

3. Materials and Methods

Study Site: Lake Kenyir is the largest man-made lake in Malaysia as well as South East Asia. The lake is situated in the eastern part of Terengganu sharing its border with Kelantan in the west and Pahang in the south. The total area of the lake is 260,000 hectares and it is one of the gateways to National Park. The lake area covers 340 islands including hilltops and highlands, more than 14 waterfalls, numerous rapids, and rivers. The waterfalls of Kenyir are well shaded by the leafy green canopy of the surrounding tropical rainforest (ECER 2007).

Sampling Technique: The study follows a non-probability convenience sampling technique for the sample selection. This technique is based heavily on calculated personal judgments and researchers utilize their perceptions and knowledge to determine the sample size. Sarunya (2012) has used convenience sampling to select the sample size from tourists in Pattaya, Thailand to measure their perception of destination and food image. Within the sample design, the purposive sampling technique has been used to collect the primary data from the respondents.

Data Attainment: The study has interviewed a total of 320 respondents from the study area for primary data collection. A structured questionnaire has been used in two sections. Section-A includes the demographic profile of tourists. Section-B consists of statements on seven dimensions, namely: Responsiveness, Tangible, Price, Communication, Assurance, Empathy, and Envi-

ronments. This section uses a 5-point Likert-type scale ranging from 1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4= agree, 5=strongly agree. The field survey has been completed in December 2017. Statistical Package for Social Science (SPSS) software has been used to measure tourist satisfaction.

Methods: The study uses a total of 39 statements under seven dimensions to analyze tourists' perception of the study site. Here four statements have been used to measure the satisfaction variable. The response of tourists is considering in agreement and disagreement based on the lowest scale to a higher level of scale. An acceptable value for the reliability coefficient (Cronbach's Alpha > 0.60) implies that the related variables are in a group of underlying or latent factors (Nunnally & Bernstein, 1994).

A generalized linear regression modeling technique is used to measure the tourists' satisfaction with the study site. The equation of the model can be given by,

$$Y = \beta^T X, \\ = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k$$

Where 'Y' is the indicator of tourists' satisfaction in the tourism study sites and X's are the factors of responsiveness, tangibles, price, communication, assurance, empathy, and environment-related indicators. The presented equation is the general expression of a linear regression model. The β 's are the regression coefficients representing the effect of the change to the study variable with the change of a related factor which can be obtained as the Least-squares estimates of the regression model from the data. The coefficient α is the constant in the model representing the fixed effect. The best suitable linear combination of the considered factors will identify the amount of change in functional relationships. A significant

likelihood ratio test statistic implies the best linear combination of the independent predictors to explain the given model.

4. Results and Discussion

Most of the respondents (>55%) are of Malay ethnicity and students. Maximum respondents are female (51%), single (64%) and they are educated by university level (54%) education. This demographic characteristic showed this destination is favorites to the local tourists, especially to the students. This site has good facilities for group visits and female tourists. The previous studies (Mehmetoglu, 2005; Lynch et al., 2011) revealed

that satisfaction in tourism sites depends on the demographic features of tourists like age, gender, education, and marital status.

Table 2 represents the tourists' perception of responsiveness in Kenyir. The higher mean scores (>3.81) of the statements in this dimension showed that Kenyir is hospitable for the tourists. Statements referring to staff are helpful and have adequate knowledge of attractions, acceptable opening hours and free to explore are rated as satisfactory by respondents. However, the lowest mean score (3.79) for the statement 'Staff are cordial to customer request' indicated that staffs were not cordial to customer request. The previous studies (Naidoo et al. 2011; Lynch et al., 2011) revealed that tourists are satisfied with tourism sites due to the necessary services provided by the staff.

Table 2 | Tourists' perception of responsiveness in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
Staff are always helpful	3.90	.697	89%	8%	3%
Staff are cordial to customer request	3.79	.856	82%	14%	4%
Staff have adequate knowledge of tourist attractions	3.90	.703	88%	9%	3%
Staff are well informed to answer visitor's questions	3.82	.808	84%	12%	4%
Visitors are made to feel welcome by the staff	3.88	.769	86%	11%	3%
Visitors are free to explore, there is no restriction	3.97	.626	91%	6%	3%
The site is open at acceptable hours	4.01	.541	94%	4%	2%
Staff are easily identified	3.90	.797	88%	11%	1%

Table 3 shows the tourists' perception of the tangibles dimension. The respondents agreed with most of the statements of this dimension. That means respondents were satisfied with the natural attractions and physical facilities of Kenyir. The lowest mean value is 3.64 for the statement of "direction signs to show within the attraction are clear and helpful". This meant that direction signs for tourists are insufficient and they were not present in suitable locations for tourists. The study of Lepper and Schroenn (2010) in Botswana and Ziegler

et al. (2012) in Mexico showed that tourists are preferred tourism sites for the attractiveness and physical facilities.

Table 4 highlights the respondents' perception of the price dimension in Kenyir. According to the respondents, the site is priced to them. The entry fee and prices for other services are reasonable to the respondents. The previous studies (Spangenberg and Settele, 2010; Hein, 2011) identified that the monetary value of the facilities is influenced the tourists towards tourism sites.

Table 3 | Tourists' perception of tangibles in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
The site is well kept	3.97	.540	92%	4%	4%
Direction signs to show within the attraction are clear and helpful	3.64	.990	76%	20%	4%
The attraction is unspoiled and uncrowned	3.91	.774	86%	9%	5%
The physical facilities are well maintained	3.99	.674	93%	5%	2%
The attraction is clean	3.96	.634	90%	6%	4%
The information center is well decorated and informative	3.85	.783	86%	11%	3%

Table 4 | Tourists' perception towards price in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
The entry price is reasonable	3.89	.633	89%	6%	5%
Prices for services provided on the site are acceptable	3.86	.666	88%	6%	6%
The site offer value for money	3.92	.562	91%	4%	5%

Table 5 reveals the perception of respondents towards the communication dimension. The mean score of the statements in the communication dimension showed a lower value (<3.65). The respondents' perception towards this dimension represented that brochures and other materials of attraction were not available and information about sustainable use of attraction was not provided to

tourists properly. Furthermore, the site has a lack of qualified guides to obtain a relevant explanation regarding the attraction. The study of Lynch et al. (2011) pointed out that promotional materials influence tourists to visit a place. Again, the study of Ziegler et al. (2012) in Mexico identified that advertisement through promotional materials can attract tourists to a site.

Table 5 | Tourists' perception of communication in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
Brochures of the attraction are available	3.53	1.039	75%	24%	1%
Information about sustainable use of attraction is provided	3.43	1.066	66%	32%	2%
There is a need for guides to obtain a relevant explanation	3.57	.977	73%	24%	3%
Print and electronic materials of attraction are available	3.64	1.030	77%	21%	2%

Table 6 represents the perception of respondents towards the assurance dimension. The highest mean value (4.03) for the statement safe and secure showed that the authority keeps tourists safe and secure in Kenyir. Acceptable mean values were showing the destination is easily accessible for everyone and has sufficient places to move and relax for tourists. A lower mean va-

lue (3.80) indicated that respondents found there were not enough parking places in the attraction during the peak periods. The study of Alegrea and Garaua (2010) and Liu et al. (2013) suggested that safety, security, and accessibility influence the tourists to visit a site. Moreover, Narvekar and Dayanand (2020) emphasized safety measures for tourists' satisfaction to visit an attraction.

Table 6 | Tourists' perception of assurance in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
You feel safe and secure at the attraction	4.03	.558	94%	4%	2%
There are sufficient places to move and relax	3.96	.650	92%	6%	2%
The attraction is easily accessible for everyone	3.93	.755	90%	8%	2%
There are enough parking places	3.80	.898	83%	16%	1%

The lower mean values, in table 7, indicated that respondents in Kenyir were not showing high positive perceptions towards the statements of empathy dimension. The respondents felt that the site has a lack of facilities for tourists. The site doesn't offer sufficient toilets, prayer places, and attention to elderly, disable, and child visitors. The

site needs to increase facilities and offer them in suitable locations and provide the necessary attention to the tourists (Table 7). The previous studies (Orlovic-Lovren, 2011; Wang et al., 2012) pointed out that necessary support facilities are important for the tourists on a site.

Table 7 | Tourists' perception of empathies in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
Attention is provided to visitors when needed	3.72	.829	82%	17%	1%
The facilities and equipment offered are at a suitable location	3.87	.786	87%	11%	2%
There are good sightseeing and comfortable facilities available	3.86	.791	87%	10%	3%
The site considers needs for elderly, disable, and child visitors	3.65	1.008	79%	19%	2%
There are sufficient toilets in the attraction	3.41	1.092	68%	31%	1%
There is sufficient place to perform prayer	3.64	.973	78%	20%	2%

Table 8 reveals the perception of respondents towards the environment dimension. The respondents were showing a positive perception of most of the statements in this dimension. Acceptable mean values indicated that tourists were satisfied with the uniqueness of Kenyir such as physical attraction, landscape, environment, and the large variety of species, rare floras and fauna, the authenticity of the site, and knowledge for tourists. The lowest mean value showed that the site is not free from pollution. The tourists and vehicles throw their waste in the lake which is the main reason to pollute this site. The study of Chen (2011) in Taiwan revealed that rare flora and fauna attract tourists'. Moreover, the study of Liu et al. (2013) in China identified that natural landscape and pollution-free environment attract tourists to

nature-based attractions.

Table 9 shows tourists' perception of satisfaction in Kenyir. The highest mean value (4.23) shows for the statement "interested to visit this place again" meant that tourists are satisfied with the facilities, services, and attractions of Kenyir. The tourist also gave positive perceptions in interpretative facilities (mean 3.86), interpreter service (mean 3.89), and whole recreational quality (mean 3.98). The aggregated mean score of satisfaction (3.99) indicates that tourists are satisfied in Kenyir. The Cronbach's Alpha (0.70) value shows the acceptable reliability of the estimate. The study of Kim et al. (2011) and Ballantyne et al. (2011) revealed that interpretative facilities and recreational quality are important attributes to attract tourists for revisiting a place.

Table 8 | Tourists' perception of the environment in Kenyir

Statements	Mean value	S.D.	Agreed	Disagreed	Neutral
There are rare floras and fauna in the attraction	3.98	.651	93%	6%	1%
The physical attraction of the site is attractive	4.01	.689	90%	5%	5%
The site is unique and authentic	4.01	.703	92%	5%	3%
This is a knowledgeable site for visitors	3.95	.672	89%	7%	4%
There are a large variety of species	3.93	.755	88%	10%	2%
The site is free from pollution	3.57	.956	72%	24%	4%
The landscape of the site is attractive	4.02	.491	93%	2%	5%
The environment is attractive	4.02	.619	92%	5%	3%

Table 9 | Tourists' perception of satisfaction in Kenyir

Statements	Cronbach's Alpha	Mean	Standard Deviation
Satisfied with interpretative facilities		3.86	0.77
Satisfied with interpreter service		3.89	0.72
Satisfied with whole recreational quality		3.98	0.67
Interested to visit this place again		4.23	0.68
Satisfaction	0.70	3.99	0.52

Table 10 shows the tourists' perception of service quality in Lake Kenyir. The measurement of reliability is assessed by Cronbach's alpha. The Alpha values of the seven dimensions ranged from 0.68 to 0.84. First, the Cronbach's alpha' value reported on the "tangible" dimension is found to be 0.80. The "empathy" dimension displays a Cronbach's alpha of 0.76 for the 6-item scale. Reliability analysis is performed on the "assurance" dimension to be 0.75. The "Responsiveness" dimension displays a Cronbach's alpha of 0.68.

The "environment" dimension displays a Cronbach's alpha of 0.73 for the 8-item scale. The

dimensions- "price" and "communication" are showing an alpha value of 0.84 and 0.79 respectively. The Cronbach's alpha value for overall service quality is 0.86. The aggregated mean score for overall service quality is 3.84. The mean score meant that tourists are satisfied regarding the overall service qualities in Kenyir. 'Environment' shows the highest aggregated mean score (3.94) among the dimensions in Kenyir where 'communication' is showing the lowest value (3.54). Other dimensions- 'responsiveness', 'tangibles', 'price', 'assurance', and 'empathy' are showing acceptable aggregated mean (> 3.68) values (Table 10).

Table 10 | Tourists' perception of service quality in Kenyir

Dimension	Cronbach's alpha	Mean	Standard Deviation
Responsiveness	0.68	3.90	0.58
Tangibles	0.80	3.89	0.54
Price	0.84	3.89	0.58
Communication	0.79	3.54	0.89
Assurance	0.75	3.93	0.57
Empathy	0.76	3.69	0.70
Environment	0.73	3.94	0.52
Overall Service quality	0.86	3.84	0.17

Evaluating the expected contribution of specific dimensions on tourist's satisfaction

The study considers a generalized regression model to specify the significant amount of contribution to the considered dimensions of service quality that may explain the satisfaction of visitors. The chief advantage of generalized linear models (GLM) is that it transforms the mean instead of transforming the variables, relaxes the normality

assumption of error structure, and thus the variance of each observation Y_i is a function of the mean $E[Y_i] = \mu_i$. Fitted model effectiveness can easily be observed through the value/df quantity, significant likelihood ratio chi-square, and Akaike's Information Criterion (AIC). However, normalized distribution of model residuals, leverage quantity, and Cook's distance measures provide the diagnostics for model validation.

Table 11 | Justification of model fitness

<i>Value/df</i> for the Deviance= 0.591, and <i>Value/df</i> for Pearson Chi-Square= 0.591.
Likelihood ratio chi-square (with 7 d.f.) =350.824, p-value = 0.000.
Akaike's Information Criterion (AIC) = 227.372.
Kolmogorov-Smirnov statistics for Residuals: D=0.19006, p-value=0.2325.
Cook's distance: min.=0.000, max=0.010.
Leverage value: min. = 0.001, max.=0.022.

Table 11 represents the diagnostics for the fitted generalized regression model. The Deviance/df is below 2.5 indicating an acceptable model fit. Likelihood ratio chi-square is 350.824 with degrees of freedom 7, and Akaike's Information Criterion (AIC) is 227.372 for the fitted model indicate that the regression model is suitable. However, residual structures still hold the normal structure (as the K-S statistics indicates) and very smaller values of Cook's distance measure and leverage value further confirm the model validity. Therefore, it could be mentioned that the perceived hypothesis is supported by the model.

Table 12 represents the estimated values of regression parameters for the seven dimensions of

service quality that are related to tourists' satisfaction in Kenyir. Responsiveness, tangible, price, assurance, and empathy dimensions are statistically significantly related to tourist satisfaction in Kenyir. It is evident that among the seven dimensions, tourists' satisfaction can be predicted by five independent dimensions, namely responsiveness, assurance, tangible, price, and empathy. The positive beta coefficient for the dimensions of responsiveness, assurance, tangible, and price were found to be statistically significant, suggesting an increasing level of satisfaction for respective dimensions. On the other hand, a significant negative beta coefficient is suggesting a decreasing level of satisfaction for the empathy dimension.

Table 12 | Regression results of Tourists' satisfaction with the service quality dimensions

Independent Variables	B	Std. Error	95% Wald Confidence Interval for B		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	d.f.	Sig.
Responsiveness	.325**	.1444	.042	.608	5.061	1	.024
Tangible	.479**	.2038	.080	.879	5.525	1	.019
Price	.223*	.1350	-.042	.488	2.728	1	.099
Communication	-.003	.1025	-.203	.198	.001	1	.980
Assurance	.335*	.1976	-.052	.723	2.879	1	.090
Empathy	-.282*	.1647	-.605	.041	2.937	1	.087
Environment	-.082	.2336	-.540	.376	.122	1	.727

*p < 0.1, **p < 0.05, ***p < 0.01.

Among the seven dimensions, “tangible” dimension (Beta = 0.479) carried the highest weight in explaining tourists overall environmental satisfaction, followed by “assurance” dimension (Beta = 0.335), “responsiveness” dimension (Beta = 0.325), “price” dimension (Beta = 0.223), communication dimension (Beta = -0.003), “environmental” dimension (Beta = -0.082) and “empathy” dimension (Beta = -0.282). The dimension “price”, “empathy” and “assurance” are statistically significant at $p < 0.1$ level. Moreover, “responsiveness” and “tangible” are statistically significant at $p < 0.05$ level. Furthermore, “communication”, and “environment” dimensions are statically insignificant for explaining tourist satisfaction in Kenyir. The model fit indices indicate that the tested hypothesis is supported by the model.

According to regression analysis results, responsiveness, tangibles, assurance, empathy, and price dimensions of service quality related to tourist satisfaction in Lake Kenyir are statistically significant. The findings have supported the outcomes of some previous studies (For instance, Lynch et al, 2011; Hein, 2011; Ziegler et al., 2012; Wang et al., 2012; Lie et al., 2013, etc.). Moreover, communication and environment dimensions are not statistically significant for predicting tourists’ satisfaction, although, the importance of these dimensions of service quality may not be ignorable. In this study, the communication dimension shows a lower aggregated mean score (3.54) implying that the respondents were not showing a high positive perception towards the statements of this dimension. Some previous studies (Lynch et al, 2011; Ziegler et al., 2012) pointed out that lack of proper advertisement and promotional activities fail to attract tourists to tourism sites. Again, the tourists were showing lower positive perceptions of the statements of environmental dimension such as the variety of species, pollution, and knowledge gathering opportunities. However, studies by Logar (2010), Dawson et al (2010), and Mao et al., (2020) revealed that pollution, lack of the protec-

tion of biodiversity, and environmental degradation make tourism sites less attractive to tourists. Again, Han and Hyun (2017) argued that environmental pollution influences the negative perception of tourists towards attractions.

5. Conclusion

The study measured tourists’ satisfaction in Lake Kenyir, Malaysia based on tourists’ perception of seven dimensions of service quality. The tourists felt that staffs are not cordial to react to customers’ request. Direction signs are not showing clearly in the attraction to help tourists. In the study, respondents felt that brochures and materials of attraction are not available for the tourists. The authorities are not conscious of providing information about the sustainable use of the attraction. The site also does not provide necessary considerations for elderly, disable, and child visitors. The authority does not set up sufficient toilets and prayer rooms in the attraction. The site doesn’t offer sufficient toilets and prayer places for the visitors. The lowest mean value of tourists’ perception shows that the site is not free from pollution. Moreover, tourists are satisfied with most of the dimensions in Kenyir. Although, most of the statements under the seven dimensions were showing mean scores above 3.40, according to the regression results, two dimensions- communication and environment not showing significant association. This is indicating that tourists are not comfortable with the advertising materials and provided information on the attraction. Again, tourists are showing their lower-level positive perceptions towards environmental aspects of attraction such as pollution, protection of biodiversity, and fewer knowledge-gathering opportunities.

The study revealed that tourists’ are highly interested to visit the tourism site again. They were satisfied in the dimensions of Kenyir in assurance,

sustainability, price, responsiveness, and empathy. There are some steps- maintain sustainability and environmental quality, increase facilities, effective marketing should be taken for increasing tourists' satisfaction in Lake Kenyir.

In this study, the expectation level of the tourists is not computed directly. Rather, getting information on whether the tourist wants to visit the place again would be an attempt to create a check and balance between the expectation and satisfaction of the tourists. Indeed, the attributes of the facilities, services, and human resources are important elements in the interpretation of the satisfaction of the tourists. Unfortunately, the study's questionnaire does not cover these points. The study assumes satisfaction as a function of the service quality dimensions. Readers should not get confused with some of the questions that seem to have more close responses. However, the situation and the grounds of those questions are completely different and are used for different perspectives of serving the specific objective.

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