Measuring the Quality of Ecotourism Services: Case Study–Based Model Validation

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Introduction

Ecotourism is gaining recognition even in the developing world, largely owed to the increasing worldwide awareness of sustainability and environmentalism. Recognizing the importance of the tourism industry in the economic well-being of a country, governments have paid attention on campaigning for specific tourism products and destinations, with special promotions undertaken to market niche tourism products, such as ecotourism. In spite of the growing effort to attract tourists, these ecotourism destinations continue to struggle to attract visitors for an unknown reason. For instance, two resorts in one of the most popular ecotourism areas of Malaysia have closed down their operations after several years because of the lack of tourists and large yearly deficits (Kedah Government, 2007). Similarly, PourAhmad, Shabanifard, Hosseini, and Soltanipour (2010) revealed that tourists in Iran have complained and expressed concerns regarding the lack of safety and security, and these factors have discouraged tourists from revisiting the destination. Moreover, Arabatzis and Grigoroudis (2009) found that the lack of tourists in Greece is related to tourists’ dissatisfaction with the facilities and infrastructure, which are insufficient for tourists and do not meet their expected standards. These studies reflect that the assessment of service quality is vital in assuring the satisfaction of tourists, especially in ecotourism destinations.

However, measuring service quality for a tourism destination is not an easy task because the characteristics of services are heterogeneous, inseparable, and intangible (Frochot & Hughes, 2000). In spite of a great deal of studies on the natural environmental aspects of ecotourism, mostly located in developing countries (Clifton & Benson, 2006), there is still a lack of research with respect to the assessment of service quality in ecotourism, especially in the domain of developing countries, and notably in southeast Asia. Most ecotourism research has focused on the natural environmental aspects of ecotourism rather than on the service quality provided to tourists. This article aims to improve a SERVQUAL model that is suitable for ecotourism areas in developing countries using five dimensions of the original model and one additional sustainability dimension. Based on a survey of 127 tourists in Tasik Kenyir, an exploratory factor analysis (EFA) was conducted to discover the underlying dimension of ecotourism services and test for reliability and validity. Using EFA resulted in seven factors totaling 27 items. These factors are labeled as follows: tangible sustainability, sustainable practices, tangibility, reliability, responsiveness, assurance, and empathy. The results reveal that when SERVQUAL is applied within the ecotourism context, new dimensions of tangible sustainability and sustainable practices may emerge. The result implies the need to refine the SERVQUAL model when used in different contexts.
studies are based on data from developed countries (Khan, 2003), and they provide models that are less applicable to the context of developing countries (Donohoe & Lu, 2009). The main objective of this article is to fill in this gap by improving the model of service quality (SERVQUAL) to ensure that it is suitable for ecotourism in developing countries. This article contributes to the existing knowledge in the ecotourism area by statistically confirming the improved model of service quality assessment. The practical contribution of this article is that it helps to identify which dimensions should be taken into consideration by service providers when developing a service quality assessment for ecotourism. Specifically, the results will assist ecotourism service operators in identifying any gaps between a provider and tourists and to find out the problems related to specific services. The improved proposed model of service quality assessment can also act as an effective tool to encourage long-term relationships with tourists and, subsequently, to increase destination loyalty.

**Literature Review**

There are various literature focusing on the service quality evaluation of tourism service providers. However, on account of the rising popularity of ecotourism, there is still a lack of research concerning how to establish an accurate service quality evaluation framework for ecotourism service providers, particularly in developing countries. Consequently, through a comprehensive literature review, we have attempted to present the significance of ecotourism for Malaysia and obtain evaluation criteria from the modified SERVQUAL models to conceptualize a suitable SERVQUAL tool for measuring the quality of ecotourism services.

**Ecotourism in Malaysia**

In recent years, Malaysia has become attractive to many tourists on the grounds that this green country has a variety of spectacular attractions. Currently, the tourism sector is an important contributor to the economy, bringing large amounts of revenue into the country. In fact, tourism which is an asset to the economic growth of Malaysia is recognized as one of the major sources of foreign exchange. It contributes at least about 8% to 10% of Malaysia’s gross domestic product (GDP; Sivalingam, 2007). Almost two million jobs were provided by the Malaysia tourism sector and tourism-related industries in 2011 (Ministry of Tourism [MoT], 2013). In 2009, Malaysia was the 9th country in terms of the number of tourist arrival, which attracted 23.6 million visitors. This grew to more than 25 million tourists in 2012, when Malaysia was considered as the 10th country among countries in the world with respect to tourism. Malaysia was also ranked fourth most price competitive country in the world in terms of the travel and tourism industry out of 133 countries surveyed (Wong, 2009).

Malaysia with good natural endowments and ecotourism is liable to become a tourist choice owing to its natural attractions and its unique geographical landscape. In fact, a lot of tourists are struck by its awesome beauty. Malaysia is one of the 12 mega-biologically diverse countries in the world according to Tourism Malaysia (2008). Malaysia has a large variety of flora and fauna: 1,500 species of flowering plants, 268 species of mammals, 150,000 and 4,000 species of invertebrates as well as fishes respectively. It is a country with an indefinite number of microorganisms. Acknowledging the natural wealth of this country, the National Ecotourism Plan was published in 1996 to develop the ecotourism sector (Ministry of Culture, Arts and Tourism, 1996). According to 2002 statistics, of the different parts of the tourism industry, nature-based tourism was growing incredibly in Malaysia, soaring to 35% per year and establishing 10% of the tourism sector in Malaysia (World Travel & Tourism Council, 2002).

**Service Quality**

Lewis and Booms (1982) regard service quality as an assessment of whether the service delivered is compatible with the needs and requirements of customers. Parasuraman, Zeithaml, and Berry’s (1985) study considered service quality to be the overall evaluation of a specific service delivered by a firm as a result of comparing the firm’s performance with a customer’s general expectations of how firms in that industry should perform. Heung, Wong, and Qu (2000) introduced the term “perceived quality” to refer to the extent of the gap between the perceptions and expectations of consumers. Finally, in the context of tourism, Briggs, Sutherland, and Drummond (2007) view service quality as a general assessment of a destination.

Parasuraman et al. (1985) developed the SERVQUAL model in which service quality is defined as the degree of discrepancy between a customer’s normative expectation of a service and his or her perceptions of service performance. The SERVQUAL model is a widely utilized instrument with demonstrated usefulness that can be used comparatively for benchmarking purposes (Brysland & Curry, 2001). In addition to its original use in the five service sectors—repair and maintenance, banking, telecommunication, securities brokerage, and credit cards—SERVQUAL has been used to measure service quality in the health care sector (Butt & De Run, 2010; Suki, Lian, & Suki, 2011), retail chains (Sun & Hui, 2009), physiotherapy (Curry & Sinclair, 2002), education service (Shekarchizadeh, Rasli, & Hon-Tat, 2011; Udo, Bagchi, & Kirs, 2011), the transport sector (Barabino, Deiana, & Tilocco, 2012), and among websites (Nemati, Gazor, MirAshrafi, & Ameleh, 2012).

In addition, Parasuraman et al. (1985, 1988) originally acknowledged 10 dimensions of service quality, which include tangibility, reliability, responsiveness, competency, communication, credibility, security, access, courtesy and understanding of the customer. Parasuraman et al. (1988)
subsequently narrowed the attributes into five dimensions by means of factor analysis: tangibility, reliability, responsiveness, assurance, and empathy. Table 1 provides the definitions of each dimension as identified by Parasuraman et al. (1988). Based on the five dimensions, Parasuraman et al. (1988) developed 22 survey items for measuring service quality.

When the SERVQUAL scale was developed by Parasuraman et al. (1985, 1988), their aim was to create a generic instrument for measuring service quality across a broad range of service categories. Ladhari (2009) makes a critical evaluation of the last 20 years of quality and satisfaction studies and research in which he concludes that SERVQUAL’s original scale should not be kept in all contexts, as it is better to adapt it or even transform it according to the industry-specific context in which the research is taking place. This implies that one generic measure of service quality is inappropriate for all services and perceived service quality is contingent upon the type of service offered (Ramsaran-Fowdar, 2007).

**SERVQUAL in Tourism Industry**

Following the advancement of service quality measurement, some tourism scholars have suggested that the role of service quality should be addressed when investigating the problem of tourist dissatisfaction and when attempting to attract new tourists or secure repeat visitors (Zhao & Di Benedetto, 2013). Tourism researchers have acknowledged that providing high-quality service is one of the most important factors for success (Atilgan, Akinci, & Aksoy, 2003). As such, it follows that service quality assessment can determine the performance of a service provider in fulfilling the requirements of tourists according to their perceptions (Mohamed, 2007). In addition, service quality assessment can also assist a resort in prioritizing the needs, wants, and expectations of tourists based on the tourist perspective. Furthermore, such an assessment of service quality can enable a business to establish benchmarks to meet the quality requirements of tourists (Khan, 2003) and can influence their future destination selection intentions (Tian-Cole & Crompton, 2003).

Service quality in the tourism industry receives growing consideration (Hudson et al., 2004) and a majority of tourism studies use the SERVQUAL instrument to measure service quality. SERVQUAL has been utilized to measure service quality in different sectors of tourism industry such as sport tourism (Kouthouris & Alexandris, 2005), hotel (Ramsaran-Fowdar, 2007), restaurant (Qin & Prybutok, 2008), and airline tourism (Pakdil & Aydin, 2007). However, previous studies have shown that SERVQUAL does not cover all dimensions of the tourism services that are important to tourists (Akaba, 2006; Briggs et al., 2007; Gilbert & Wong, 2003). Fick and Ritchie (1991) tested the SERVQUAL instrument in four tourism service sectors, airline, hotel, restaurant, and skiing, and found that the scale does not appear to be entirely valid for all tourism service sectors and the number of dimensions in the Parasuraman et al. (1988) version of the SERVQUAL scale seems too limiting. For example, Juwaheer (2004) modified SERVQUAL for hotel industry and identified nine hotel factors namely reliability, assurance, extra-room benefits sought, staff communication skills and additional benefits, room attractiveness and decor, empathy, staff outlook and accuracy, food and service-related factors, and hotel surroundings including environmental factors. Gilbert and Wong (2003) refined the five dimensions to seven dimensions—reliability, assurance, facilities, employees, flight patterns, customization, and responsiveness—to measure airline services. Khan (2003) introduced the new dimension of eco-tangibles when measuring service quality in an ecotourism area. Most recently, Kim, Ahn, and Chung (2013), when examining the quality of ubiquitous tourist services provided in Jeon-ju Hanok village in South Korea, applied the following completely new dimensions: system quality, information quality, interface design, and convenience.

This discussion demonstrates that most of the studies used a modified or adapted version of the SERVQUAL scale in the tourism area. In spite of the growth and potential of ecotourism in developing countries, there is a lack of study on the tool to measure ecotourism service quality. Although services in the tourism business possess some underlying similarities, significant differences do exist among these entities.

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**Table 1. The Definitions of the SERVQUAL Dimensions.**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tangibility</td>
<td>Elements that can be observed physically: The aesthetics of physical facilities, tools, employees, and communication items.</td>
</tr>
<tr>
<td>2. Reliability</td>
<td>The capacity to deliver the promised services dependably and accurately. This dimension includes meeting promises pertaining to delivery, pricing, and complaint handling.</td>
</tr>
<tr>
<td>3. Responsiveness</td>
<td>The willingness to assist customers in a prompt manner. This dimension advocates positive service attitudes and requires personnel to pay attention to customer requests, questions, and complaints.</td>
</tr>
<tr>
<td>4. Assurance</td>
<td>The knowledge and civility of employees and their capability of exercising trust and confidence.</td>
</tr>
<tr>
<td>5. Empathy</td>
<td>The caring attitude and individualized attention given by an organization to its customers.</td>
</tr>
</tbody>
</table>

Note. SERVQUAL = service quality.
with respect to regular tourists as opposed to the ecotype. It has been reported that the ecotourists’ motivations, education, age, and behavior differ from mass tourists (Fennell & Smale, 1992; Loker-Murphy, 1996). As ecotourists differ from mass tourists, their service quality expectations deserve a separate inquiry.

**Sustainability Approach in Service Quality**

Apart from the five dimensions by Parasuraman et al. (1988), scholars have debated the need for the sustainability dimension to be incorporated when measuring service quality in the context of tourism and the need to consider sustainability as one of the key factors that attract tourists to a tourism destination (Garcia-Falcon & Medina-Munoz, 1999). Tourists who have recently become more concerned about the environment are demanding environmental protection. These tourists are willing to pay additional sums of money to enjoy visiting an environmentally sustainable destination (Petrosillo, Zurlini, Corliano, Zaccarelli, & Dadamo, 2007). Moreover, the definition of ecotourism denotes the need to conserve the environment and provide benefits to local residents (Holden & Sparrowhawk, 2002).

Dinan and Sargeant (2000) emphasized that sustainability in tourism refers to safeguarding the environment and local residents, while satisfying tourists and ensuring growth in the industry. However, as suggested by Lynn and Brown (2003), the positive influence of ecotourism can be realized only if proper management and monitoring are in place to avoid losses in biological diversity and prevent the exploitation of the local host. He et al. (2008) investigated the types of people who benefit from the conservation effort of an ecotourism destination in Wolong, China, and they noted the unequal distribution of economic benefits among stakeholders (businesses, tourists, and local communities). Although acknowledging the success of the conservation effort in terms of improved infrastructure and accommodation facilities, He et al. (2008) found that local people were neglected when the majority of those who were involved in the area were external operators and laborers and the goods were imported from the outside. Thus, the lesson learned is that sustainable attributes that provide an optimal situation for all stakeholders should not be ignored when measuring the service quality of any ecotourism destination.

The concept of sustainability in the tourism industry stems from the sustainable development paradigm, which describes “sustainability” as “development that meets the needs of the present, without compromising the ability of future generations to meet their own needs” (World Commission for the Environment and Development, 1987: 42). Following this definition, within the context of tourism, sustainability is an approach aimed at preserving the environment and culture of the communities that host tourists while simultaneously fulfilling the needs of tourists and maintaining the growth of the industry (Dinan & Sargeant, 2000). Hence, the sustainability issue should not be overlooked in ecotourism destinations (Khan, 2003) and should thus be included in the assessment of service quality.

**Method**

**Measurement Development**

The current study uses literature review and interview, to identify the dimensions that ecotourists consider when evaluating and determining the quality of services across ecotourism industry. This methodology is in alignment with previous research such as that of Bhat (2012), who also employed literature and in-depth interview to clarify the dimensions for their SERVQUAL model. Eight respondents were interviewed to understand the underlying SERVQUAL dimensions in the context of ecotourism. During the interview, the participants were asked to indicate the relevant attributes of tourism service providers that they perceived as an important part of the service quality of ecotourism firms. However, some of the items identified by past studies were not mentioned. In these cases, at the end of the interview, we attempted to obtain opinions as to whether this was due to forgetfulness or through not considering the attributes to be relevant. Finally, the attributes of SERVQUAL which had the greatest unanimity among the opinions were selected and put in the tourist’s own words.

In addition to the five dimensions of service quality offered by Parasuraman et al. (1988), we included the sustainability attributes in our improved model of SERVQUAL for ecotourism. The items of sustainability were developed through literature review (Garcia-Falcon & Medina-Munoz, 1999; He et al., 2008; Khan, 2003) and interview. For the tangibility, reliability, responsiveness, assurance, and empathy dimension, the items were extracted from Akama and Kieti (2003) and underwent some changes based on the interviewees’ point of view. Akama and Kieti (2003) modified the original SERVQUAL model proposed by Parasuraman et al. (1988) for an ecotourism destination in Kenya. The questionnaire was piloted on 34 respondents. After the elimination, addition, and rephrasing of several questions, the final questionnaire consisting of 27 questions was prepared. The SERVQUAL items were determined on 5-point Likert-type scales ranging from 1 (strongly agree) to 5 (strongly disagree).

We followed Frochot and Hughes (2000), who suggested measuring service quality using the experience of tourists rather than using the gap measure as in the original SERVQUAL model. The gap measure has received heavy criticism regarding its reliability because of the possible interrelation between expectations and experiences (Akama & Kieti, 2003). The gap measure between the expectations and experiences of tourists was calculated using the formula proposed by Parasuraman et al. (1985) by deducting experience scores from expectation scores to evaluate the quality.
assessments of consumers. When service quality is measured using experiences, the scores are based on perception statements only (Frochot & Hughes, 2000).

**Sample and Data Collection**

This study was conducted at Tasik Kenyir, Malaysia, the largest man-made lake in Southeast Asia. The main reason for choosing Tasik Kenyir was its status as the most popular lake-based ecotourism destination in Malaysia that is still active and that boasts a reasonable number of resorts operating in the area. In addition, Tasik Kenyir was selected because this area is a natural area that ecotourism practices such as nature-based activities (e.g., jungle tracking, kayaking) are well accrued and being managed to be ecologically sustainable (Australian Commonwealth Department of Tourism, 1994). Furthermore, in the Malaysia National Ecotourism Plan, Tasik Kenyir was chosen as one of the ecotourism sites. According to the information that was obtained, there were previously nine resorts operating in Tasik Kenyir; however, only seven resorts are still operating. The resorts currently in operation in Tasik Kenyir include (a) Lake Kenyir Resort and Spa, (b) Petang Island Resort, (c) Federal Government Rest House, (d) Kenyir Sanctuary Resort, (e) Kelah Rakit Resort, (f) Tanjung Metong Resort, and (g) Musang Kenyir Resort.

The population for this study was derived from tourists who were visiting Tasik Kenyir and were residing in any one of the resorts for at least one night. Information regarding the total number of visitors checking into the resorts was collected several days prior to the administration of the survey. The information was obtained from the resort offices by means of phone calls, and the questionnaires were distributed by a team of seven field researchers. The seven field researchers were briefly trained on how to approach the respondents and on the procedures for carrying out face-to-face surveys. Of the 283 tourists who stayed at least one night at one of the resorts in Tasik Kenyir during the time the survey was conducted, the questionnaires were successfully distributed to 157 respondents, and all respondents returned the questionnaires. Out of 157 questionnaires, 30 responses were discarded as the questionnaires were not completed. However, 127 questionnaires were used in data analysis; thus, the usable response rate was 80.9%.

**Results**

**Reliability and Validity**

The exploratory factor analytic approach is chosen over confirmatory approach due to the fact that it does not set any priori constraints on the estimation of components. Factor Analysis was performed on the 27-item constructs to figure out the underlying dimensions of ecotourism services (Table 1). The study used principal component analysis with a Varimax Rotation (Kinnear & Taylor, 1996). The number of factors was not restricted. For the sake of convergent validity, 0.5 was used as a factor loading cut-off point. Items had to display a 0.3 loading difference with any other factors to ensure distinctive validity. Using these criteria caused seven factors with 60.66% variance. The new two factors were called tangible sustainability as well as sustainable practices according to the items loaded onto it. Tangible sustainability is the ecotourism attractions fulfilling the needs of present tourists and sustainable practices are the eco-friendly activities that ecotourism service providers practice to keep the environment as well as culture of the ecotourism destination.

Bartlett’s Test of Sphericity revealed a chi-square at 1295.325 (p < .000), which verified that the correlation matrix was not an identity matrix, thereby validating the suitability of the factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was performed, which showed KMO = 0.861 is higher than the suggested 0.6 value (Tabachnik & Fidel, 2001). Cronbach’s alpha (an index of reliability) was also performed on each factor/dimension. Table 2 reveals that for all the seven factors, Cronbach’s alpha is above 0.6 and support the internal cohesiveness of the items forming each factor (Hair, Black, Babin, & Anderson, 2010).

**Service Quality at Tasik Kenyir**

Service quality gaps used the modified SERVQUAL principle to measure mean scores of the visitors’ expectations as well as perceptions-SERVQUAL principle is based on the notion of service quality including performance as well as expectations. The outcome of this comparison (measurement of service quality) is shown in Table 3. The overall service quality of tourism services was estimated when mean SERVQUAL scores averaged on all dimensions of service quality were computed one by one. According to the data, Tasik Kenyir’s service quality, to some extent, is below the expectations of its tourists (−0.17). Dimension-wise analysis displays the service quality score on all dimensions, including tangible sustainability, sustainable practices, tangibility, reliability, responsiveness, assurance as well as empathy (−0.11, −0.19, −0.18, −0.22, −0.18, −0.14, and −0.17, respectively).

**Discussion and Implications**

This study was motivated by the need for research that can lead to a better understanding of the dimensions of service quality in the ecotourism industry. The results of this study indicated that the model of service quality in the ecotourism area can be conceptualized as a seven-factor model that comprises tangible sustainability, sustainable practices, tangibility, reliability, responsiveness, assurance, and empathy. This shows that the dimensions in SERVQUAL cannot be
Table 2. Factor Analysis Results With Varimax Rotation.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Factor loadings</th>
<th>Cronbach's α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible sustainability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Visual attraction and the appeal of natural attractions</td>
<td>0.657</td>
<td>.615</td>
</tr>
<tr>
<td>1.2 Non-crowded and unspoiled park</td>
<td>0.679</td>
<td></td>
</tr>
<tr>
<td>1.3 Nature-based activities (e.g., jungle tracking, kayaking, bird watching)</td>
<td>0.710</td>
<td></td>
</tr>
<tr>
<td>1.4 Minimal change to existing landforms and vegetation</td>
<td>0.544</td>
<td></td>
</tr>
<tr>
<td>Sustainable practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Use of natural/local resources as equipment and facilities</td>
<td>0.751</td>
<td>.637</td>
</tr>
<tr>
<td>2.2 Emphasis on the recycling and reuse of products</td>
<td>0.603</td>
<td></td>
</tr>
<tr>
<td>2.3 Development integrated with local environment/culture</td>
<td>0.815</td>
<td></td>
</tr>
<tr>
<td>Tangibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Physical facilities and equipment are visually aligned and in good condition</td>
<td>0.734</td>
<td>.689</td>
</tr>
<tr>
<td>3.2 Information centre provides relevant information</td>
<td>0.669</td>
<td></td>
</tr>
<tr>
<td>3.3 Adequate transport systems are available</td>
<td>0.657</td>
<td></td>
</tr>
<tr>
<td>3.4 Accessibility of physical facilities and natural resources</td>
<td>0.619</td>
<td></td>
</tr>
<tr>
<td>3.5 Neat appearance of the resort staff</td>
<td>0.663</td>
<td></td>
</tr>
<tr>
<td>Tangibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 The staff provides prompt services</td>
<td>0.855</td>
<td>.757</td>
</tr>
<tr>
<td>4.2 The staff provides on-time services</td>
<td>0.870</td>
<td></td>
</tr>
<tr>
<td>4.3 The staff provides accurate information</td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 The staff is willing to assist tourists</td>
<td>0.811</td>
<td>.700</td>
</tr>
<tr>
<td>5.2 The staff responds to tourists' question(s)</td>
<td>0.783</td>
<td></td>
</tr>
<tr>
<td>5.3 The staff provides details regarding services and products offered</td>
<td>0.780</td>
<td></td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 Tourists feel safe and secure</td>
<td>0.774</td>
<td>.691</td>
</tr>
<tr>
<td>6.2 The staff is consistently courteous</td>
<td>0.722</td>
<td></td>
</tr>
<tr>
<td>6.3 The staff has the knowledge that is necessary to answer questions</td>
<td>0.762</td>
<td></td>
</tr>
<tr>
<td>6.4 The establishment provides adequate safety facilities</td>
<td>0.617</td>
<td></td>
</tr>
<tr>
<td>Assurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 The staff provides tourists with personal attention</td>
<td>0.709</td>
<td>.739</td>
</tr>
<tr>
<td>7.2 The staff understands the specific needs of tourists</td>
<td>0.667</td>
<td></td>
</tr>
<tr>
<td>7.3 Conveniently located facilities and equipment</td>
<td>0.711</td>
<td></td>
</tr>
<tr>
<td>7.4 Comfortable facilities</td>
<td>0.752</td>
<td></td>
</tr>
<tr>
<td>7.5 Adequate water supply</td>
<td>0.657</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Ecotourism SERVQUAL Scores Averaged on All Dimensions.

<table>
<thead>
<tr>
<th>Service quality dimensions</th>
<th>Mean scores</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expectation</td>
<td>Perception</td>
<td>Service quality</td>
</tr>
<tr>
<td>Tangible sustainability</td>
<td>4.32</td>
<td>4.21</td>
<td>−0.11</td>
</tr>
<tr>
<td>Sustainable practices</td>
<td>4.00</td>
<td>3.81</td>
<td>−0.19</td>
</tr>
<tr>
<td>Tangibility</td>
<td>4.05</td>
<td>3.87</td>
<td>−0.18</td>
</tr>
<tr>
<td>Reliability</td>
<td>4.04</td>
<td>3.82</td>
<td>−0.22</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>4.18</td>
<td>4.00</td>
<td>−0.18</td>
</tr>
<tr>
<td>Assurance</td>
<td>4.20</td>
<td>4.06</td>
<td>−0.14</td>
</tr>
<tr>
<td>Empathy</td>
<td>4.13</td>
<td>3.96</td>
<td>−0.17</td>
</tr>
<tr>
<td>Overall service quality</td>
<td>4.13</td>
<td>3.96</td>
<td>−0.17</td>
</tr>
</tbody>
</table>

Note. SERVQUAL = service quality.

replicated fully to the ecotourism industry and confirm the significance of the sustainability dimensions (tangible sustainability and sustainable practices) in the measurement of service quality in the context of ecotourism as suggested by Garcia-Falcon and Medina-Munoz (1999), Khan (2003), and He et al. (2008). The finding of the study is consistent with
Ladhrari’s (2009) finding, which stated that SERVQUAL’s scales should be adapted or transformed according to the industry’s specific context. In its broadest sense, the results indicate that when the SERVQUAL model is applied to a new context, new dimensions may appear. As a result, when assessing the quality of a specific service or destination, there is a necessity to refine the model further to make sure that all vital dimensions are taken into consideration.

Moreover, the result also illustrated that the overall quality of ecotourism services as provided by Tasik Kenyir to its tourists is marginally acceptable. A low SERVQUAL score (−0.17) clearly shows that tourism services drop slightly below the expectations of tourists. Specifically, management must give priority to Tangible Sustainability and Assurance (dimensions of ecotourism services), where the SERVQUAL scores were relatively low to improve the overall quality of tourism services. Managing perceived service quality means that the paramount concern of tourism service providers should be to create consistency between the expected service and the perceived service to meet the tourists’ expectations. To minimize the gap between the expected service and the perceived service, those people in charge of traditional marketing activities do their best to keep and fulfill their promises. It should be noted that their promises should be achievable. Hence, tourism service providers should try to provide the tourists with such a high level of quality that it is beyond the visitors’ perceived expectations. In this case, the visitors are satisfied and astonished by the quality of the perceived service, which creates a “wow” syndrome among them.

This article contributes to the existing knowledge by refining the SERVQUAL model in ecotourism context. It proposed a conceptual model of service quality that is suitable for ecotourism areas in developing countries. The proposed comprehensive model was empirically validated by perceptual data that were collected from tourists in Tasik Kenyir. The practical contribution of this article is that the proposed SERVQUAL model gives an opportunity to ecotourism service providers to find their strengths and shortcomings as well as meet the needs of the tourists by a better estimation of service quality.

**Conclusion**

Every tourist expects to be treated with dignity and respect. This expectation is likely to be higher in the ecotourism industry where the ecotourists tend to be much better educated than general tourists (Fennell & Smale, 1992; Loker-Murphy, 1996). Therefore, ecotourism managers can use the modified SERVQUAL tool of the present study to measure service quality and improve it.

Certain limitations of the study should be noted. First, the research was conducted with a specific focus on Tasik Kenyir. Future studies should attempt to investigate more ecotourism areas to determine whether other areas provide the same results. Moreover, this study focused only on the tourist perspective of service quality; thus, the opinion is one sided. No attention has been devoted to the role of tourism industry employees, particularly those in hotels and resorts, with respect to the success of quality service programs (Sharpley & Forster, 2003). Previous research has shown that factors such as employee job satisfaction are relevant in service quality improvement (Snipes, Oswald, LaTour, & Armenakis, 2005). It is hoped that future research could also emphasize the responses of employees to ensure that the information gained through research does not center on the views of one party only and thus to provide more valuable information for resort operators aiming to improve service delivery. In addition, in the present study EFAs with varimax rotation were used to explore the underlying dimension of ecotourism services. However, EFA has a number of significant shortcomings. First, common factor analysis with varimax rotation assumes uncorrelated factors or traits; its application to data exhibiting correlated factors can produce incorrect conclusions regarding the number of factors (Segars & Grover, 1993). Second, because the solution obtained is only one of an infinite number of potential solutions, the estimates obtained for factor loadings are not unique (Segars & Grover, 1993). Therefore, due to given limitations and the potential advantage of using confirmatory factor analysis (CFA), future study should confirm the proposed SERVQUAL instrument by applying structural equation modeling (SEM). In addition, future research should address and examine the association between service quality dimension and service quality performance in terms of tourist satisfaction, loyalty, and intention to revisit.

**Declaration of Conflicting Interests**

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