How do environmental knowledge, environmental sensitivity, and place attachment affect environmentally responsible behavior? An integrated approach for sustainable island tourism

Tien-Ming Cheng & Homer C. Wu

To cite this article: Tien-Ming Cheng & Homer C. Wu (2015) How do environmental knowledge, environmental sensitivity, and place attachment affect environmentally responsible behavior? An integrated approach for sustainable island tourism, Journal of Sustainable Tourism, 23:4, 557-576, DOI: 10.1080/09669582.2014.965177

To link to this article: http://dx.doi.org/10.1080/09669582.2014.965177

Published online: 10 Oct 2014.

Article views: 1471

View related articles

View Crossmark data

Citing articles: 13

Download by: [Università Studi di Bologna]  Date: 09 October 2017, At: 08:34
How do environmental knowledge, environmental sensitivity, and place attachment affect environmentally responsible behavior? An integrated approach for sustainable island tourism

Tien-Ming Cheng and Homer C. Wu*

National Chiayi University, Graduate Institute of Recreation, Tourism and Hospitality Management, Chiayi, Taiwan; National Taichung University of Education, Graduate Program of Sustainable Tourism and Recreation Management, 140 Min-sheng Road, Taichung 40306, Taiwan

(Received 19 June 2013; accepted 1 September 2014)

Previous studies have explored tourists’ environmentally responsible behavior (ERB) from the perspectives of individual commitment, attractiveness, and involvement. This study approaches from the standpoint of environmental knowledge (EK); it probes tourists’ behavior to facilitate sustainable tourism development, and constructs a sustainable island tourism development model by integrating EK, environmental sensitivity, place attachment, and ERB. Four hundred and seventy seven tourists visiting the Penghu Islands, Taiwan, were surveyed. Structural equation modeling was used to determine the relationships among the variables and the mediating effects. Results indicate that higher levels of tourists’ EK about the Penghu Islands are associated with stronger environmental sensitivity; environmental sensitivity which tourists have for island tourism is positively associated with place attachment. The extent of place attachment of Penghu as perceived by tourists is also positively associated with stronger ERB. When tourists are highly sensitive to the attraction, they are more likely to exhibit ERB. Environmental sensitivity and place attachment were found to exert significant effects in mediating the relationships between EK and ERB. This study pioneers the integration of all four constructs in a sustainable tourism behavior model for tourists to island tourism destinations. Suggestions for marketing and implementation of sustainable tourism, and their managerial implications are proposed.

Keywords: environmental knowledge; environmental sensitivity; place attachment; environmentally responsible behavior; sustainable tourism development

Introduction

For many years, research on tourists’ environmentally responsible behavior (ERB) has been widely carried out and discussed. However, most studies focus on recreation involvement (Lee, 2011), commitment (Lee, 2011), obligation (Dolnicar & Leisch, 2008), attractiveness (Cheng, Wu, & Huang, 2013), concern (Wurzinger & Johansson, 2006), and place attachment (Ramkissoon, Smith, & Weiler, 2013; Ramkissoon, Weiler, & Smith, 2012, 2013). Although the contribution of these findings is recognized, it is uncertain if tourists’ ERB is associated with their level of environmental knowledge and degree of environmental sensitivity (Cheng et al., 2013). There seems to be a general lack of understanding of the influence of knowledge and sensitivity on ERB.

*Corresponding author. Email: hcwu@ms3.ntcu.edu.tw

© 2014 Taylor & Francis
Environmental knowledge reflects the degree of concern regarding issues in physical environments (Amyx, DeJong, Lin, Chakraborty, & Wiener, 1994). Huang and Shih (2009) suggested that environmental knowledge is related to an understanding and concern regarding natural environments, and encourages an individual’s stronger responsibility for environmental protection. Townsend (2000) stated that divers’ environmental knowledge helps enhance their skills and they show responsible behaviors that reduce their impacts on dive environment. Divers’ ERB echoes Peterson’s (1982) assertion on environmental sensitivity, which claims that tourists with richer environmental knowledge will be more likely to appreciate, care for, and show empathy toward the environment. Thus, the enhancement of tourists’ development of environmental knowledge should reinforce their sensitivity to a destination. This is the primary concern of this study.

Halpenny (2010) indicated that environmental degradation is often considered to be human-driven. Environmental sensitivity is an individual’s affective characteristic to perceive environments with empathy (Peterson, 1982; Stapp, 1974). Chawla (1998) defined environmental sensitivity as “a predisposition to take an interest in learning about the environment, feeling concern for it, and acting to conserve it, on the basis of formative experiences”. Place attachment, on the other hand, is individuals’ positive affection toward specific places (Giuliani, 2003; Hidalgo & Hernandez, 2001; Mesch & Manor, 1998; Riley, 1992; Williams & Vaske, 2003). Affection refers to individuals’ favor, appreciation, and concern for the environment. Moore and Graefe (1994) noted that when tourists are influenced by the quality of a destination’s recreational activities or its heritage (Hou, Lin, & Morais, 2005), they gain respect and express inner affection for the destination, particularly the symbolic meaning or belongingness, and even a sense of centrality and objectivity (Bricker & Kerstetter, 2000). Many previous studies demonstrated that place attachment positively influences ERB (Ramkissoon et al., 2012; Ramkissoon, Weiler, & Smith, 2013; Ramkissoon, Smith, & Weiler, 2013; Vaske & Kobrin, 2001). This study assumes that when tourists care for, show respect for, and have high levels of attachment to a destination, they will have the intention to demonstrate positive behaviors, such as prevention or active protection for the given place.

This study takes the Penghu Islands, Taiwan, as the research base. In 2012, total tourists on the islands had reached 901,552 (Penghu County Government, 2013). The islands are small in area, have few geographic barriers (Baum, 1997; Lockhart, 1997), and preserve their indigenous ecological environments, and special fauna and flora. However, the islands have species fragility and high environmental sensitivity (Michalena, Hills, & Amat, 2009; Lee, Yang, Chen, & Chen, 2010). Thus, with limited resources and environmental vulnerability, large numbers of tourists could have a serious impact on the sustainable development of island tourism (Aguiló, Alegre, & Sard, 2005; United Nations Environment Programme [UNEP], 2003). Therefore, it is urgent to inform tourists about the concept of sustainability in order to mitigate serious damage to precious ecological and cultural resources (Lindsay, Craig, & Low, 2008).

Thus, this study aims to construct a causal relationship model of “environmental knowledge—environmental sensitivity—place attachment—ERB” by a “cognition—affection—attitude—behavior” model (Fishbein & Manfredo, 1992). In other words, tourists with rich environmental knowledge will have a high degree of concern and respect (environmental sensitivity) to the destination. Such concern and respect will reinforce tourist’s affective and functional attachment (place attachment) to the attraction they visited and, finally, they will exhibit ERB toward the visited places. The findings of this study should help government agencies and tourism operators to learn how to develop tourists’ ERB in tourist areas,
enhancing sustainable development for island tourism. The conceptual framework of this study is presented in Figure 1.

This study develops perspectives and explores the effects of tourists’ environmental knowledge, environmental sensitivity, and place attachment on ERB for island tourism in order to bridge gaps found in previous research. In practice, this study’s findings should guide operational and managerial agencies to recognize the importance of education for tourists’ environmental knowledge and environmental sensitivity so that tourists will develop place attachment and ERB toward the destination. This research model is the first of its kind to be used in Asia, but is suitable for the sustainable development of island tourism elsewhere, and could be generalized to other places with fragility of species and environmental vulnerability issues, such as nature-oriented tourism locations, heritage conservation areas, ecotourism destinations, and protected areas.

**Literature review and hypotheses**

From the perspective of cognitive psychology, Fishbein and Manfredo (1992) suggested the formation of behavioral intention as a process of “cognition—affection—attitude—intention”. According to Folkes (1988), cognition is a type of direct experience or knowledge and perception of subjects after the integration of information acquired by different channels. Through cognition and evaluation, knowledge and perception become beliefs which stand for environmental knowledge, as suggested by Amyx et al. (1994). Bagozzi, Gopinath, and Nyer (1999) emphasized that affection is a type of psychological feeling that represents environmental sensitivity, which generates inner environmental concern. Attitude is an individual’s subjective cognition and evaluation regarding specific behavior (Ajzen, 1985), and place attachment is a type of evaluation of subjective cognition. Behavior refers to an individual’s actual actions (Ajzen, 1985), and ERB is the adopted action. Broadly accepted, cognition influences affection, affection influences attitude, and attitude influences behavioral intention (Fishbein & Manfredo, 1992; Folkes, 1988). This study aims to further explore the effects of environmental knowledge (cognition) on environmental sensitivity (affection); environmental sensitivity (affection) on place attachment (attitude); and place attachment (attitude) on ERB (behavior).

Environmental knowledge is the degree of concern regarding natural environments (Amyx et al., 1994; Huang & Shih, 2009). Fryxell and Lo (2003) defined environmental knowledge as a kind of common knowledge, including environmental protection, natural environments, ecosystems, etc. Haron, Paim, and Yahaya (2005) suggested that humans can demonstrate their abilities by the level of understanding of environmental knowledge. Previous measurements of environmental knowledge were mostly constructed from the perspective of environmental education, and based on knowledge and skills of ecology,
environmental science, environmental problems/issues, and environmental action strategies (Marcinkowski & Rehring, 1995). According to the research of Wurzinger and Johansson (2006), tourists with richer knowledge of the environments will be more concerned about the environmental issues of visited locations.

Peterson (1982) defined environmental sensitivity as “affective attributes that result in an individual viewing the environment from an empathetic perspective”. It was divided into two parts: “individuals’ favor for natural environments” and “intention to have action for a harmonious relationship with natural environments”. Individuals who are sensitive to the environment possess a basic appreciation and concern for the natural environment, yet this appreciation and concern lacks sufficient intensity to motivate them to alter their behavior. Hungerford and Volk (1990) further explained that environmental sensitivity was “an empathetic perspective towards the environment”, which has been regarded as one of the variables contributing to responsible environmental citizenship; a close connection between environmental sensitivity and the development of pro-environmental behavior has been identified.

In the past, environmental education demonstrated that when individuals have more environmental knowledge, their environmental concern will be stronger (Hines, Hungerford, & Tomera, 1987; Lyons & Breakwell, 1994). Huang and Shih (2009) suggested that people with higher level environmental knowledge will fulfill the responsibility of environmental protection. Sivek and Hungerford (1989/1990) pointed out that environmental knowledge can enhance people’s environmental sensitivity, and environmental knowledge and environmental sensitivity influence the performance of environmental behavior.

Place attachment is a multi-dimensional concept related to individuals, psychological processes, scope, or scale (Scannell & Gifford, 2010). It is the identification, gratitude, and concern linked to special places caused by positive affection between individuals and natural environments (Hidalgo & Hernandez, 2001; Manzo, 2003, 2005; Moore & Graefe, 1994). It combines affection, cognition, and behavior (Harris, Brown, & Werner, 1996). Therefore, leisure/tourism researchers have widely applied place attachment to discussions of tourists’ attachment emotions and behavior since 1980 (Bricker & Kerstetter, 2000; Hou et al., 2005; Hwang, Lee, and Chen, 2005; Kyle, Bricker, Graefe, & Wickham, 2004; Ramkissoon, Smith, & Weiler, 2013; Williams & Vaske, 2003). Regarding the dimensions of measurement, tourism scholars mostly described the meaning of place attachment to tourism attractions through the two dimensions of “place dependence” and “place identity” (Bricker & Kerstetter, 2000; Kyle, Absher, & Graefe, 2003; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck, & Watson, 1992). Place dependence reflects how well a location facilitates users’ particular activities, as well as the importance of a place in meeting the functional goals of individuals (Moore & Graefe, 1994); moreover, place dependence can easily elicit concrete actions or behaviors from individuals (Borden & Schettino, 1979; Schreyer, Jacob, & White, 1981; Williams et al., 1992; Williams & Vaske, 2003). Place identity, on the other hand, denotes an important substructure of self-identity and a critical symbolic link between a person and a location (Lalli, 1992; Proshansky, Fabian, & Kaminoff, 1983; Stedman, 2002; Williams & Vaske, 2003).

Environmental sensitivity emphasizes individual’s concern and respect for the environment (Peterson, 1982). Previous studies on tourism demonstrated that involvement is the antecedent of place attachment (Kyle et al., 2004; Moore & Graefe, 1994). Hummon (1992) defined place attachment as “an individual’s affective involvement and belonging to places”. Bricker and Kerstetter (2000) indicated that place attachment is a type
of emotional belonging, and users’ perceived combination of themselves and the places. Based on the above literature, when tourists have emotional concern and respect for travel environments, and are sensitive to the attraction, they will easily have affective involvement and belonging to the locations. In other words, they will develop higher place attachment to tourism destinations.

Sustainable development is a growing global issue and ERB is closely linked to attaining sustainable development (Dolnicar & Grün, 2009). ERB refers to actions that reflect concerns for the natural environment by individuals or groups (Hungerford & Peyton, 1976), and measures taken to prevent or solve environmental problems (Chao & Lam, 2011; Huang & Yore, 2005; Hungerford & Volk, 1990; Hsu & Roth, 1998; Marcinkowski, 1988; Sivek and Hungerford, 1989/1990). People with such characteristics will voluntarily show sustainable behaviors and exercise the least impacts on natural environments (Kollmuss & Agyeman, 2002), and even make their actions beneficial for the environment (Steg & Vlek, 2009).

Many earlier studies suggested that the reason people did not value ERB was due to their neglect of natural environments. Thus, it is necessary to readjust public values regarding ERB (Reser, 1995; Roszak, 1992). In recent years, the public has begun to recognize many environmental problems (Bamberg & Moser, 2007; Dolnicar, 2010). If they have the intention to demonstrate positive behavior for environments, they will effectively mitigate their damage to the environment (Dunlap & Scarse, 1991; Howell & Laska, 1992; Kollmuss & Agyeman, 2002; Scannell & Gifford, 2010; Tarrant & Cordell, 1997). Peer pressure, regulations, formal education, and instruction about environmental protection can contribute to the performance of ERB (Halpenny, 2010). Sia, Hungerford, and Tomera (1985) and Marcinkowski (1988) also indicated that environmental sensitivity is an antecedent variable for ERB. As for the enhancement of ERB, scholars have presented two types of viewpoints. Some proposed rewards or punishments to encourage ERB (Poortinga, Steg, Vlek, & Wiersma, 2003; Steg, Dreijerink, & Abrahamse, 2006). Others suggested that in comparison to punishment, rewards can more effectively reinforce ERB, as encouragement will connect with positive affection and attitude, and, thus, better support behavioral change (Geller, Winett, & Everett, 1982). For tourism, the selection of modes of transport is a key factor of tourists’ intention to adopt ERB, particularly nature-based tourism (Bamberg & Schmidt, 2003; Harland, Staats, & Wilke, 1999; Heath & Gifford, 2002). Evidence also demonstrates that, if people are committed to protect the environment, they are more likely to show ERB (Lehman & Geller, 2004; Schultz, Oskamp, & Mainieri, 1995).

As previous studies stated, place attachment is an antecedent of ERB (Alegre & Juaneda, 2006; Budruk, Thomas, & Tyrrell, 2009; Cheng et al., 2013; Everett & Aitchison, 2008; Halpenny, 2006; Randall & Rollins, 2009). Early research focused on relationships between individual environmental behaviors and familiar residential places. With long-term place relationship and commitment to the local environment, people developed attachments to places, which enhanced ERB in daily lives (Hines et al., 1987; Relph, 1976). Recent studies have applied ERB to the field of tourism and recreation (Gössling & Williams, 2010; Hou et al., 2005; Hwang et al., 2005; Kyle et al., 2004; Lee, 2001; Schultz, 2000), and some studies revealed that when individuals have attachment to specific tourist locations, they will care about the environment and be concerned with issues of environmental protection (Carr, 2002; Harrison, Burgess, & Clark, 1998; Pooley & O’Connor, 2000).

Based on the above statements, tourists with rich knowledge about a destination are more likely concerned about the local environments, and tend to have sensitivity and
attachment to that place, which will further reinforce their identification and dependence on the attraction. Finally, tourists will display ERB for the tourism locations. Therefore, the following research hypotheses are proposed (also see Figure 2):

- **H1**: Environmental knowledge possesses a significant and direct impact on tourist environmental sensitivity (**H1**), and an indirect impact on place attachment (**H1/C0**).
- **H2**: Environmental sensitivity exerts a significant and direct impact on tourist place attachment (**H2**), and an indirect impact on ERB (**H2/C0**).
- **H3**: Environmental sensitivity performs a significant and direct impact on ERB.
- **H4**: Place attachment exercises a significant and direct impact on ERB.

**Method**

**Location selection**

This study selected the largest island area in Taiwan, the Penghu Islands, as the study site. Penghu includes 90 large and small islands. Due to marine erosion, the coastline is complex, with many marine abrasion platforms and fringing reefs. Thus, the islands are species rich. Penghu Bay was selected as one of the “world’s most beautiful bays” by the Most Beautiful Bays in the World Club, following San Francisco Bay in the USA, Qingdao Bay in China, Halong Bay in Vietnam, and Mont Saint-Michel Bay in France. Penghu’s islands were also listed in Lonely Planet’s Best in the Travel 2011 guide as one of the world’s best secret islands for natural scenery, as well as the “touching nostalgia” of unspoiled traditional Taiwanese culture. Therefore, this study selects Penghu as the research base. Moreover, as tourism in Penghu is vigorous, it is the most popular island attraction in Taiwan; during busy seasons there are several hundred thousands of tourists, which have environmental impacts on the more fragile natural areas, especially through water activities (surfing, jet-ski, banana boats, diving, etc.). Thus, knowing how to enhance tourists’ environmental knowledge of and sensitivity toward the environment, while properly managing tourism development and environmental protection, are key issues for Penghu’s island tourism.
Sample selection and data collection

Airplanes are the main transportation means for tourists to reach Penghu Islands. Thus, the questionnaires were distributed at the Magong Airport of Penghu. Data were collected from July to August 2011, which is the peak season. Convenience sampling was employed for securing a larger group of respondents. Data collection was conducted by the next-to-pass method. A total of 512 questionnaires were distributed, with 477 valid questionnaires returned, for a valid return rate of 93%.

Measurement

Nine items are contained in the dimension of “environmental knowledge”, as proposed by Haron et al. (2005). This study conducts factor analysis on these nine items and adopts principal component analysis and varimax as rotation. Two factors with eigenvalues greater than one are extracted and named “sustainable development knowledge” (four items) and “environmental protection knowledge” (five items). Measurement of “environmental sensitivity” is based on the scale constructed by Daniel (2002), including four items. Items that measure place attachment are based on the scales developed by Williams and Roggenbuck (1989), and two demonstrated dimensions, “place identity” and “place dependence” are adopted, involving eight items in total. ERB is measured by “general behavior” and “special behavior”, as proposed by Smith-Sebasto and D’Costa (1995), including eight items. All scales are based on the Likert 5-point scale, from “strongly disagree (1)” to “strongly agree (5)”.

Measure reliability and validity analysis

In order to measure correlation among the dimensions, this study conducts confirmation factor analysis and tests validity and reliability of the returned valid questionnaires. Data in Table 1 show four variables meet Cronbach’s α of sub-dimensions and reliability of dimensions construct reliability reaches above 0.7, satisfying basic requirement of internal consistency (Hair, Anderson, Tatham, & Black, 1998). In addition, factor loading falls in the range of 0.60–0.90, which is significant ($p < 0.001$) and matches the standard of 0.50–0.95, as suggested by Bagozzi and Yi (1988). Composite reliability (CR) of dimensions is above 0.60 (Fornell & Larcker, 1981), indicating good reliability of the constructs measured in this study (Jöreskog & Sörbom, 1996).

Regarding validity of scales, average variances extracted (AVE) between the dimensions and corresponding items is used to calculate average explanatory power. According to the result of the measurement, AVE is above 0.50; thus, the scales of this study have convergent validity (Fornell & Larcker, 1981). In addition, discriminant validity is measured upon AVE of dimensions greater than square root of correlation coefficients between the dimensions. AVE of this scale is 0.50–0.65, which all reach the standard. The square roots of AVE dimensions are 0.67–0.81, and are above the correlation coefficients of pair dimensions (see Table 2). Therefore, the scale has good convergent validity and discriminant validity (Fornell & Larcker, 1981).

Results

Respondents’ profile

There were more female than male respondents (57% as against 43%). The largest single age group was the 20–25 year olds (36%). Most respondents were service industry
Table 1. Outcomes of confirmatory factor analysis.

<table>
<thead>
<tr>
<th>Dimensions and items</th>
<th>Mean (SD)</th>
<th>Factor loading ($\lambda$)</th>
<th>CR</th>
<th>AVE</th>
<th>Cronbach’s $\alpha$ R² (errors)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainable development knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know that the maintenance of ecological balance will enhance the sustainable development of islands.</td>
<td>4.59 (0.59)</td>
<td>0.71***</td>
<td>0.52</td>
<td>0.50 (0.50)</td>
<td></td>
</tr>
<tr>
<td>I know that for the next generation, we should protect the natural resources of islands.</td>
<td>4.71 (0.50)</td>
<td>0.72***</td>
<td>0.52</td>
<td>0.48 (0.48)</td>
<td></td>
</tr>
<tr>
<td>I know that the maintenance of diversity of species on islands will balance the ecology.</td>
<td>4.57 (0.63)</td>
<td>0.76***</td>
<td>0.57</td>
<td>0.43 (0.43)</td>
<td></td>
</tr>
<tr>
<td>I know that extensive development of natural resources will consume the islands.</td>
<td>4.61 (0.60)</td>
<td>0.70***</td>
<td>0.48</td>
<td>0.52 (0.52)</td>
<td></td>
</tr>
<tr>
<td>Environmental protection knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know that excessive ocean recreational activities will damage oceanic environments of islands.</td>
<td>4.38 (0.76)</td>
<td>0.70***</td>
<td>0.51</td>
<td>0.51 (0.51)</td>
<td></td>
</tr>
<tr>
<td>I know that carbon dioxide emissions by automobiles and motorcycles will pollute the islands.</td>
<td>4.42 (0.71)</td>
<td>0.70***</td>
<td>0.49</td>
<td>0.51 (0.51)</td>
<td></td>
</tr>
<tr>
<td>I know that over extensive tourism development will sacrifice natural resources and environments.</td>
<td>4.32 (0.78)</td>
<td>0.60***</td>
<td>0.37</td>
<td>0.63 (0.63)</td>
<td></td>
</tr>
<tr>
<td>I know that, in the trip, the use of green tableware, such as bowls and chopsticks will avoid damage to the environment.</td>
<td>4.43 (0.77)</td>
<td>0.72***</td>
<td>0.51</td>
<td>0.48 (0.48)</td>
<td></td>
</tr>
<tr>
<td>I know that the use of public transportation or biking can avoid air pollution.</td>
<td>4.39 (0.74)</td>
<td>0.63***</td>
<td>0.40</td>
<td>0.60 (0.60)</td>
<td></td>
</tr>
<tr>
<td>Environmental sensitivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy natural environments</td>
<td>4.52 (0.60)</td>
<td>0.71***</td>
<td>0.50</td>
<td>0.50 (0.50)</td>
<td></td>
</tr>
<tr>
<td>I am concerned about the ecological preservation in Penghu.</td>
<td>4.13 (0.72)</td>
<td>0.70***</td>
<td>0.50</td>
<td>0.50 (0.50)</td>
<td></td>
</tr>
<tr>
<td>I appreciate the natural environment of Penghu</td>
<td>4.46 (0.64)</td>
<td>0.74***</td>
<td>0.55</td>
<td>0.45 (0.45)</td>
<td></td>
</tr>
<tr>
<td>I care about the impact of my living habits on the natural environments of Penghu.</td>
<td>4.14 (0.75)</td>
<td>0.67***</td>
<td>0.45</td>
<td>0.55 (0.55)</td>
<td></td>
</tr>
<tr>
<td><strong>Place attachment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place identity</td>
<td>4.00 (0.82)</td>
<td>0.73***</td>
<td>0.54</td>
<td>0.46 (0.46)</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Table 1. (Continued)

<table>
<thead>
<tr>
<th>Dimensions and items</th>
<th>Mean (SD)</th>
<th>Factor loading (λ)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>CR&lt;sup&gt;b&lt;/sup&gt;</th>
<th>AVE&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Cronbach’s α</th>
<th>R&lt;sup&gt;2&lt;/sup&gt; (errors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touring Penghu has a deep meaning for me</td>
<td>3.75 (0.86)</td>
<td>0.88***</td>
<td>0.77 (0.23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a strong sense of identifying with Penghu.</td>
<td>3.83 (0.83)</td>
<td>0.84***</td>
<td>0.70 (0.30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a strong sense of belonging in regard to Penghu.</td>
<td>3.82 (0.87)</td>
<td>0.76***</td>
<td>0.58 (0.42)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place dependence</td>
<td></td>
<td>0.88 0.64 0.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy traveling in Penghu more than other tourism destinations.</td>
<td>3.61 (0.89)</td>
<td>0.88***</td>
<td>0.77 (0.23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more satisfied with traveling in Penghu than other tourism destinations.</td>
<td>3.53 (0.89)</td>
<td>0.90***</td>
<td>0.80 (0.20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is more important to visit Penghu than other tourism destinations.</td>
<td>3.37 (0.88)</td>
<td>0.77***</td>
<td>0.60 (0.40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No other tourism locations can replace the tourism of Penghu.</td>
<td>3.33 (0.95)</td>
<td>0.63***</td>
<td>0.40 (0.60)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmentally responsible behavior</td>
<td></td>
<td>0.77 0.55 0.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to solve the environmental problems in Penghu.</td>
<td>3.73 (0.76)</td>
<td>0.64***</td>
<td>0.41 (0.59)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I read the reports, advertising, and books related to the environments of Penghu.</td>
<td>3.76 (0.78)</td>
<td>0.61***</td>
<td>0.37 (0.63)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I discuss with others about environmental protection of Penghu.</td>
<td>3.56 (0.81)</td>
<td>0.69***</td>
<td>0.48 (0.52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to convince companions to adopt positive behaviors in the natural environments of Penghu.</td>
<td>3.78 (0.77)</td>
<td>0.74***</td>
<td>0.55 (0.45)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special behavior</td>
<td></td>
<td>0.80 0.51 0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I see others’ inadequate environmental behavior in Penghu, I will report it to the authorities.</td>
<td>3.68 (0.82)</td>
<td>0.78***</td>
<td>0.61 (0.39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>According to the law, I will deter any behavior damaging the environment of Penghu.</td>
<td>3.64 (0.81)</td>
<td></td>
<td>0.62 (0.38)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I pick up trash and branches when I see them on the beach.</td>
<td>3.67 (0.82)</td>
<td>0.65***</td>
<td>0.42 (0.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I participate in activities to clean the beach (such as picking up trash on the beach).</td>
<td>3.66 (0.89)</td>
<td>0.61***</td>
<td>0.37 (0.63)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup>All normalized factor loadings are significant; <sup>b</sup>Composite reliability = (Σλ)/ [(Σλ)² + Σ(θ)] (Jöreskog & Sörbom, 1996); <sup>c</sup>Average variance extracted = (Σλ²)/ [Σλ² + Σ(θ)]. *** p < 0.001.
employees (31.9%), followed by students (23%). The majority were unmarried (68.1%) with university degree (68.1%). Monthly incomes were mostly NT$10,001–30,000 (37.7%) (US$1 = NT$29.40). Regarding tourists’ residential areas, interviewed tourists were mostly from southern Taiwan (36.6%) and northern Taiwan (35.8%). Many respondents had visited Penghu more than three times (40.6%); 34.2% were visiting Penghu for the first time. The profile of respondents is summarized in Table 3.

**Structural model**

In order to measure causal relationships between latent variables and observable variables, this study adopted structural equation modeling (SEM) and maximum likelihood estimation (MLE) to estimate the correlations of variables in the proposed model. SEM was used to evaluate the influence of environmental knowledge, environmental sensitivity, and place attachment on ERB. This study tests overall model goodness of fit, with the results, as follows: $\chi^2 = 59.5$ ($p = 0.00$, df = 31), NCI ($\chi^2$/df) (normed chi-square index) = 1.91, GFI (goodness-of-fit index) = 0.97, AGFI (adjusted goodness-of-fit index) = 0.95, NFI (normed fit index) = 0.97, RFI (relative fit index) = 0.96, CFI (comparative fit index) = 0.98, IFI (incremental fit index) = 0.98, RMR (root mean square residual) = 0.01, and RMSEA (root mean square error of approximation) = 0.05. The above figures satisfy the standard of fit, as suggested by Jöreskog et al. (1996), and it demonstrates that the scales constructed by this study have goodness of fit (see Table 4).

**Path analysis**

Among the four hypotheses, environmental knowledge significantly and positively influences environmental sensitivity ($H_1$) ($\gamma_{11} = 0.64^{***}$, $p < 0.001$), which means that the parameter estimate of the path is significant. $H_1$ is supported. Environmental sensitivity significantly and positively influences place attachment ($H_2$) ($\beta_{21} = 0.60^{***}$, $p < 0.001$).
Table 3. Demographic profile of the respondents.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>205</td>
<td>43.0</td>
</tr>
<tr>
<td>Female</td>
<td>272</td>
<td>57.0</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20–25</td>
<td>172</td>
<td>36.0</td>
</tr>
<tr>
<td>26–35</td>
<td>157</td>
<td>32.9</td>
</tr>
<tr>
<td>36–45</td>
<td>115</td>
<td>24.1</td>
</tr>
<tr>
<td>46–55</td>
<td>21</td>
<td>4.5</td>
</tr>
<tr>
<td>≥56</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>152</td>
<td>31.9</td>
</tr>
<tr>
<td>Unmarried</td>
<td>325</td>
<td>68.1</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary school or below</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Junior high school</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Senior high school</td>
<td>85</td>
<td>17.9</td>
</tr>
<tr>
<td>University or college</td>
<td>325</td>
<td>68.1</td>
</tr>
<tr>
<td>Graduate school</td>
<td>55</td>
<td>11.5</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soldier/teacher/government official</td>
<td>78</td>
<td>16.4</td>
</tr>
<tr>
<td>Businessman/worker</td>
<td>77</td>
<td>16.1</td>
</tr>
<tr>
<td>Service industry</td>
<td>152</td>
<td>31.9</td>
</tr>
<tr>
<td>Freelancer</td>
<td>26</td>
<td>5.5</td>
</tr>
<tr>
<td>Student</td>
<td>110</td>
<td>23.0</td>
</tr>
<tr>
<td>Housekeeper</td>
<td>15</td>
<td>3.1</td>
</tr>
<tr>
<td>Farm/fishing/livestock industry</td>
<td>7</td>
<td>1.5</td>
</tr>
<tr>
<td>Retired</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>2.1</td>
</tr>
<tr>
<td>Monthly income (NT$(^{a}))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤10,000</td>
<td>62</td>
<td>13.0</td>
</tr>
<tr>
<td>10,001–30,000</td>
<td>180</td>
<td>37.7</td>
</tr>
<tr>
<td>30,001–40,000</td>
<td>83</td>
<td>17.4</td>
</tr>
<tr>
<td>40,001–50,000</td>
<td>60</td>
<td>12.6</td>
</tr>
<tr>
<td>50,001–60,000</td>
<td>54</td>
<td>11.3</td>
</tr>
<tr>
<td>≥60,001</td>
<td>38</td>
<td>8.0</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Taiwan</td>
<td>171</td>
<td>35.8</td>
</tr>
<tr>
<td>Mid Taiwan</td>
<td>75</td>
<td>15.7</td>
</tr>
<tr>
<td>Southern Taiwan</td>
<td>174</td>
<td>36.6</td>
</tr>
<tr>
<td>Eastern Taiwan</td>
<td>8</td>
<td>1.7</td>
</tr>
<tr>
<td>Islands (Kinmen, Matsu, Penghu)</td>
<td>45</td>
<td>9.4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>Previous visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First timers</td>
<td>163</td>
<td>34.2</td>
</tr>
<tr>
<td>Two times</td>
<td>120</td>
<td>25.2</td>
</tr>
<tr>
<td>Three times and above</td>
<td>194</td>
<td>40.6</td>
</tr>
</tbody>
</table>

\(^{a}\)US$1 = NT$29.40 (30 October 2012).
H₂ is supported. Environmental sensitivity significantly and positively influences ERB (H₃, β₃₁ = 0.32***, p < 0.001). H₄ is supported. Place attachment positively and significantly influences ERB (H₄, β₃₂ = 0.45***, p < 0.001). H₄ is supported. The outcomes are shown in Figure 3.

According to Tables 5 and 6, there are five paths regarding the effects on tourists’ ERB. There are two direct paths: “place attachment – ERB” and “environmental sensitivity – ERB”. Total positive and direct effects are 0.77 (0.45 + 0.32). There are three indirect paths: “environmental sensitivity—place attachment—ERB”, “environmental knowledge—environmental sensitivity—ERB”, and “environmental knowledge—environmental sensitivity—place attachment—ERB”. Total positive and indirect effects are 0.64 (0.27 + 0.20 + 0.17). Total effect is 1.41, which means that the effects of direct paths are more significant than indirect paths (0.77 > 0.64). Two paths of effects on ERB are triggered by environmental sensitivity and place attachment, which

![Figure 3. Structural model of sustainable tourism behavior model for tourists of Penghu Islands tourism.](image-url)
means that “environmental sensitivity” and “place attachment” are key factors for tourists to have ERB.

**Discussion**

This study explores the effects of the Penghu Islands tourists’ environmental knowledge and environmental sensitivity on place attachment and ERB. The findings reveal that when tourists have richer environmental knowledge, their environmental sensitivity to tourism locations will be higher. In other words, tourists with a high level of knowledge on sustainable development and environmental protection are more likely to enjoy the environment of tourist destinations, and are more concerned about (sensitivity) local surroundings and impact of their living habits on environments. They will also adopt certain

<table>
<thead>
<tr>
<th>Paths of effect</th>
<th>Direct effect</th>
<th>Indirect effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place attachment—ERB</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Environmental sensitivity—ERB</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Environmental sensitivity—place attachment—ERB (0.60 × 0.45)</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>Environmental knowledge—environmental sensitivity—ERB (0.64 × 0.32)</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Environmental knowledge—environmental sensitivity—place attachment—ERB (0.64 × 0.60 × 0.45)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.77</td>
<td>0.64</td>
</tr>
<tr>
<td>Total effect</td>
<td>1.41</td>
<td></td>
</tr>
</tbody>
</table>
actions (ERB) to develop harmonious relationships with natural environments while travelling. The results of this study respond to the research of Wu, Yeh, and Huan (2010), which suggested that tourists with richer environmental knowledge are more likely concerned about the environment.

Environmental sensitivity is the key antecedent variable of place attachment and ERB. In other words, when tourists’ environmental sensitivity to the destinations is significant, it will enhance their affective identification with the locations; in the meantime, they will show responsible behavior toward the places as well. The results validate the findings of Peterson (1982), Sia et al. (1985), and Marcinkowski (1988).

According to previous research, when tourists are highly attached to the attractions, they are more likely to show their ERB (Cheng et al., 2013; Lee, 2011; Ramkissoon et al., 2012; Ramkissoon, Weiler, & Smith, 2013). It means that tourists with high attachment to the destination will prevent it from being damaged, and even convince others to adopt behavior benefitting the local environment.

In accordance with the findings of this study, there are two indirect paths of effects in the research model. One is that environmental knowledge will indirectly influence ERB by environmental sensitivity; the other is that environmental sensitivity will indirectly influence ERB through place attachment. Therefore, “environmental sensitivity” and “place attachment” can be considered the strongest and the most effective predictor of tourists’ ERB. That is, “environmental sensitivity” and “place attachment” were found to exert significant effects in mediating the relationships between environmental knowledge and ERB. The above results mirror the studies done by Vaske and Kobrin (2001), and Ramkissoon et al. (2012). In order to accomplish the goal of sustainable island tourism, marketing and management agencies at tourist destinations should specifically establish programs to reinforce tourists’ environmental sensitivity and place attachment for the attraction so that ERB can grow. Surveys, like the one carried out for this paper, can provide a wealth of ways to develop those programs — including, for example, the answers to questions in this research survey on visitor reactions to using public transport or green tableware — see Table 1.

**Conclusion**

From the perspectives of environmental knowledge, this study explored the relationships between tourists’ knowledge, sensitivity, place attachment, and ERB, in order to construct a behavioral model for sustainable island tourism development. Based on the results, the findings are summarized as follows: (1) in the relationship between tourists’ environmental knowledge and environmental sensitivity, a high level of environmental knowledge is associated with a stronger environmental sensitivity; (2) in the relationship between tourists’ environmental sensitivity and place attachment, when tourists are highly sensitive to the destination, their place attachment will be more significant; (3) in the relationship between environmental sensitivity and ERB, stronger environmental sensitivity is associated with stronger ERB toward the destination; and (4) in the relationship between place attachment and ERB, higher place attachment enhances ERB.

**Suggestions**

Based upon the structural model of this study, environmental knowledge and environmental sensitivity can effectively enhance tourists’ place attachment and reinforce ERB. Thus, it is important for the Penghu tourism administration to promote tourists’ knowledge of, and
sensitivity toward the environment. First, this paper suggests that Penghu tourism agencies should provide in-service training and courses for local tour leaders, tour guides or interpreters by introducing the concepts of sustainable development and environmental protection to help increase tourists’ knowledge about the destination. Guided tours or interpretive services should be offered regularly to enhance visitors’ awareness of and appreciation for the environment. Second, skilled and informed environmental interpretation is necessary to facilitate knowledge about nature, culture and history, and the relationship between people and the environment (de la Barre, 2013; Xu, Cui, Ballantyne, & Packer, 2013). Through program participation and activities involvement, tourists will gain knowledge of the visited places, and develop sensitivity for those particular sites during guided tours. Third, they need well informed campaigns based on the types of market research carried out for this research to build the image of environmentally responsible tourism. Finally, after sensitivity has been enhanced, tourists should then demonstrate place attachment toward the destination, and once tourists are attached to the specific place, they will exercise ERB. These processes will benefit the destination, and focus and enthuse its management. Moreover, in order to preserve natural and cultural resources, in addition to enacting laws to regulate behaviors harmful to the environment, other authorities should actively reinforce tourists’ attachment to tourism locations and facilitate their ERB by providing signboards, interpretive programs, guided tours, environmental education activities, and printed and online materials, all aimed at creating a new unique selling point for the Penghu Islands, leading to their sustainable tourism development.

Limitations and future research directions
Tourism destinations can formulate strategies for sustainable tourism by identifying the antecedent variables of tourists’ ERB. However, there are some limitations to this study. First, this study targets only Penghu. Future studies are needed to explore other areas with special features, in order to examine the differences of the variables in different types of trips. Second, this study investigated the ERB of tourists in Penghu by convenience sampling, and conducted the survey during summer vacation due to its high visitation rate. However, the results are only representative of that period. Long-term performance of tourist behaviors will be validated by long-term exploration and analysis of different periods. Third, the research model of this study demonstrated the relationship among four variables. Future researchers should focus on other variables, such as attitude toward sustainable tourism development and supports for sustainable tourism, in order to explore the causal relationship of ERB. Fourth, future researchers could conceptualize tourists’ collaborative behaviors in sustainable tourism, and develop a scale to explore collaborative behaviors, in order to enhance sustainable tourism through interaction between tourists and local residents.

Notes on contributors
Tien-Ming Cheng is a professor at the Graduate Institute of Recreation, Tourism and Hospitality Management, National Chiayi University in Taiwan. His main research interests include sustainable tourism, marine tourism, recreation behavior, and human resource management in tourism.

Homer C. Wu is a professor at National Taichung University of Education in Taiwan and the former director of the Graduate Program of Sustainable Tourism and Recreation Management. His main research interests include recreation and tourism management, especially in the fields of heritage interpretation, environmental education, and ecotourism development.
References


Environmental Management, Environmental Image and the Competitive Tourist Attraction

Wei Hu & Geoffrey Wall

To cite this article: Wei Hu & Geoffrey Wall (2005) Environmental Management, Environmental Image and the Competitive Tourist Attraction, Journal of Sustainable Tourism, 13:6, 617-635, DOI: 10.1080/09669580508668584

To link to this article: http://dx.doi.org/10.1080/09669580508668584

Published online: 22 Dec 2008.

Article views: 998

View related articles

Citing articles: 46 View citing articles
Environmental Management, Environmental Image and the Competitive Tourist Attraction

Wei Hu and Geoffrey Wall
Department of Geography, University of Waterloo, Canada

Studies of competitiveness have been most often conducted at the destination rather than the attraction level. However, a destination is an aggregation of tourist attractions plus supporting infrastructure and services, and many attractions are small-scale destinations in themselves, providing visitors with multiple opportunities. This paper, by examining the environmental strategies adopted in the development process of Nanshan Cultural Tourism Zone, the most visited attraction in Hainan, China, shows that the image, and hence the competitiveness of tourist attractions can be enhanced through sound environmental management practices.

Keywords: attractions, China, competitiveness, environmental management

Introduction: Tourist Attractions

Tourist attractions are an essential ingredient for successful tourism destination development, for, ‘Whatever stage of tourism development has been reached, attractions can be used to reinforce, consolidate, and assist the promotion of the tourism product’ (Walsh-Heron & Stevens, 1990: 12). The importance of tourist attractions to tourism has been acknowledged in several ways. First of all, tourist attractions are the basis for tourism. They have been described as the ‘lifeblood’ (Gunn, 1997) and the ‘heart’ (Swarbrooke, 1998) of tourism. To be more specific, attractions provide three functions for the development of tourism destinations. In the first place, attractions are the reason people travel to a destination. They are pulling visitors to a particular place (Gartner, 1996). They constitute the core elements of tourism products (Swarbrooke, 2002). Second, attractions offer images and symbols for the presentation of destinations to the public (Leiper, 1990). Third, the development of other tourism services such as transportation, lodging and food distribution is dependent on the existence of destination attractions (Gartner, 1996; Goeldner et al., 2000). Therefore, Gunn (1988) claimed that attractions are the ‘first power’, ‘lodestones for pleasure’ and the real energiser of tourism in a region. Without attractions there would be no need for other tourism services. This view has been supported by other commentators (Nickerson & Kerr, 1998; Pigram, 1983; Yale, 1997) who have stated that without attractions of some form or another, tourism would not exist or might be very different from what we know today.

Tourism is a widespread phenomenon and ‘tourist attraction’ is not a strange term to most people. However, only limited research attention has been paid specifically to tourist attractions, although they occupy a vital position in
tourism development. From a research perspective, tourist attractions have a 'Cinderella' status (Stevens, 1991) and are 'a poor cousin' to the accommodation, transport and tour operator components of tourism (Pearce, 1991). 'The study of tourist attractions has not received the same prominence as other suppliers of tourist services' (Pearce, 1998: 1). For example, few books have been written that specifically address tourist attractions (but see Swarbrooke, 2002). Nevertheless, tourist attractions are very important and merit further research.

While tourism attractions are fundamental components of tourism, there is no generally accepted definition of tourism attractions. Bonn (1986) defines tourist attractions as anything that draws visitors with no apparent bounds in terms of forms or types. Yale (1997) commented that such a definition is too vague. According to the British Tourist Authority, attractions are permanently established destinations which are capable of attracting visitors, with a primary purpose of providing entertainment, interest, and educational experiences to the public, rather than being primarily a retail outlet, or a venue for sports, film, or theatrical performances (cited in Swarbrooke, 2002). This definition excludes temporary events such as expositions, sports, performances and festivals. However, it has been criticised as being a ‘myopic, restricted and outdated view’ (Swarbrooke, 2002). Pearce (1991: 6) suggested that ‘a tourist attraction is a named site with a specific human or natural feature which is the focus of visitor and management attention’. Middleton (1988) used similar descriptors in his definition: a tourist attraction refers to any designated resource which is controlled and managed to cater to the public’s enjoyment, amusement and education. Both definitions emphasise that tourist attractions are managed entities. Extended natural or cultural features and uncontrolled attractions, such as climate and weather, are excluded (Yale, 1997). Walsh-Heron and Stevens (1990) provided a broader definition that only partly overcomes the above issues:

A visitor attraction is a feature in an area that is a place, venue, or focus of activity and does the following: (1) Sets out to attract visitors/day visitors from resident or tourist populations, and is managed accordingly; (2) Provides a fun and pleasurable experience and an enjoyable way for customers to spend their leisure time; (3) Is developed to realise this potential; (4) Is managed as an attraction, providing satisfaction to its customers; (5) Provides an appropriate level of facilities and services to meet and cater to the demands, needs, and interests of its visitors; (6) May or may not charge an admission for entry. (Walsh-Heron & Stevens, 1990: 2)

This definition appears to mix the definition of the phenomenon with the evaluation of its output.

It is evident that a succinct and rigorous definition applicable to all visitor attractions does not exist. It has even been suggested that such a definition could become irrelevant or meaningless for the attraction sector since attractions are always changing (Stevens, 1991). The highly disparate types of attractions and constantly changing interests of visitors make a convenient definition difficult to achieve (Pearce, 1991) and result in ‘definitional and taxonomic nightmares’ for tourism scholars (Lew, 1994). The limitations of the definitions highlight the difficulties in understanding and communicating about this complex component of the tourism system.
For the purpose of this study, the following definition is adopted: a tourist attraction is a permanent resource, either natural or human-made, which is developed and managed for the primary purpose of attracting visitors. Clearly this definition excludes temporary attractions such as events and festivals. Further, attractions such as national parks and churches, which are primarily managed for preservation or religious purposes, are not included. The definition recognises that attractions are economic entities that derive income from visitors through admission charges and/or other activities such as donations or the sale of related products and services. While all attractions, even those run by non-profit organisations, must eventually balance budgets or face their likely demise, this paper will focus upon a privately owned attraction that is aimed at pursuing profits. Such entrepreneurs may be tempted to eschew long-term benefits in the quest for short-term returns, reduced environmental quality being a cost of such a strategy.

Destination and Attraction Competitiveness

According to the Concise Oxford Dictionary, to compete is to strive for superiority in a quality. In business, competitiveness ‘is about producing more and better quality goods and services that are marketed successfully to consumers at home and abroad’ (Newall, 1992: 94). In this context, competitiveness, often associated with an individual firm, is defined as ‘a firm’s ability to sustain its profitability in competition with its rivals’ (Huybers & Bennett, 2002: 216). McFetridge (1995) also pointed out that the concept of competitiveness is best understood at the firm level. An unprofitable firm is uncompetitive. Similarly, the World Competitiveness Yearbook’s definition says that competitiveness is ‘the ability of entrepreneurs to design, produce and market goods and services, the prices and non-price qualities of which form a more attractive package of benefits than those of competitors’ (Ritchie & Crouch, 2003: 12). In these definitions, profitability and market share are identified to be indicators of a firm’s competitiveness. As asserted by McFetridge’s (1995), profitability is a sufficient indicator of current competitiveness, and market share may also be one if the firm is attempting to maximise profits.

Ritchie and Crouch (2003) provided a framework (Table 1) for understanding competition between companies. Consistent with Porter’s (1990) view, they contended that competition between companies within any industry is driven by five forces: rivalry among existing firms, threat of substitute products or services, threat of new entrants, bargaining power of suppliers and of buyers. Companies compete to attract certain segments of the market that they have targeted in their marketing strategy for the purpose of getting market share, profitability and survival. Competitiveness can be managed – companies use market research, competitor analysis and corporate strategy to establish a competitive position. Ultimately, a company’s goods and services embody its competitive capabilities.

Most research on tourism competitiveness has focused upon the destination level, through which strategies are suggested to enable destinations to retain or gain a superior position in the tourism market (Faulkner et al., 1999; Hassan, 2000; Huybers & Bennett, 2003; Kozak & Rimmington, 1999; Mihalic, 1999; Ritchie & Crouch, 2003). A tourist destination is composed of attractions, infra-
structure, transportation and hospitality services (Mill & Morrison, 1992). These elements can be classified into two categories: primary features and secondary features. The former includes climate, ecology, culture, traditional architecture and land forms. The latter refers to those developments introduced specifically for tourism such as hotels, catering, transport, facilities for activities and amusements (Laws, 1995). It follows that a tourism destination can be considered to be an aggregation of tourist attractions plus supporting facilities. From strategic and management perspectives, the competitiveness of a destination stems from the strengths and weaknesses of the companies within that destination (Dwyer & Kim, 2003). At the same time, specific tourist attractions are also often comprised of the primary and secondary features described above, albeit at a smaller scale and with a more simple structure.

According to Ritchie and Crouch (1995: 45),

Tourism enterprise, particularly with regard to entrepreneurship, new venture development and small business, contributes to destination development and competitiveness. A competitive destination depends in part on the local tourism industry consisting of numerous alternative suppliers which must survive on the basis of services which are either unique or superior in some way, or are available at a lower cost. Moreover, competition among firms creates an environment for excellence.

Therefore, every individual attraction contributes to the overall attractiveness of the whole destination area, and the competitiveness of a destination rests substantially with each attraction’s performance. Thus, the competitiveness of individual attractions, in aggregate, largely determines the prosperity of tourism development in the whole destination area.

Ritchie and Crouch (2003: 2) suggested that

what makes a tourism destination truly competitive is its ability to increase tourism expenditure, to increasingly attract visitors while providing them

<table>
<thead>
<tr>
<th>Table 1 Elements of competition between companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>The structure</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The territory</td>
</tr>
<tr>
<td>The stakes</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The tools</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Source: Ritchie and Crouch, 2003
with satisfying memorable experiences, and to do so in a profitable way, while enhancing the well-being of destination residents and preserving the natural capital of the destination for future generations.

The above definition of competitiveness encompasses entire destinations, but this paper focuses on a specific attraction, albeit on one that is sufficiently large and prominent to be considered a destination in its own right, although it is just one attraction in the larger context of the province in which it is located.

Ritchie and Crouch (2003) further proposed that competitiveness is comprised of multiple dimensions: economic, social, cultural, political, technological and environmental. This paper is concerned primarily with the latter dimension. It examines how a positive environmental image has been created by the managers of a tourist attraction through the adoption and implementation of an environmental management system; the creation of this image has become an important element in the formulation of a successful marketing strategy and, hence, in its competitiveness. The political dimension is also discussed through consideration of the role of governmental activities in facilitating and supporting the initiatives of the attraction managers. Various technologies, such as electric cars and waste and water management systems are mentioned in passing. The economic dimension is seen in the successful attraction of large numbers of visitors. The cultural and social dimensions are not examined in detail in this paper although relevant information is available in Li (2003).

Put more simply and concisely than in the previous definition and discussion, tourism competitiveness encompasses three basic dimensions at both macro (e.g. nation or destination) and micro (e.g. firm or company) levels. They are economic profitability, sociocultural appeal and environmental strength. The significance of the environment to tourism development is widely accepted. A number of authors (Hassan, 2000; Huybers & Bennett, 2003; Mihalic, 1999) have argued that tourism competitiveness can be increased by enhancing the destination’s environmental attractiveness through environmental management and marketing strategies. However, empirical studies and confirmatory examples are absent at both macro and micro levels. This paper, by examining the development process and environmental strategies adopted by Nanshan Cultural Tourism Zone (NCTZ), the most visited tourist attraction in Hainan, China, provides an example of the link between tourism competitiveness and environmental management.

**Competitiveness and Environmental Management**

Environmental sustainability is fundamental for tourism competitiveness, especially from a long-term perspective. Growing environmental awareness globally means that customers have begun to change their attitudes to consumerism and increasingly demand that industries provide products that are more ‘environmentally friendly’ and ‘ethically correct’ (Holden, 2000). The tourism sector is no exception. Visitors are increasingly seeking a high-quality environment and there is a growing demand for cleanliness and an aesthetically pleasing environment at attractions. Polluted natural settings, ugly buildings, overcrowded places, eroded landscapes and intrusive noise from all sources, separately or in combination, result in diminished quality of visitor experiences.
Understanding and responding to such a trend has been supported by tourism segmentation research. For example, a study by Ryel and Grasse (1991) showed that there are 58 million Americans over the age of 50, travelling above-average distances and lengths of stay, and having a greater propensity towards environmentally sensitive tourism. Jurowski et al. (1993) suggested that the latest generation of tourists supports more ecocentric activities and programs. This is also exemplified by the rapid growth of so-called ecotourism (Cetron, 2001).

Tourism policy makers are increasingly realising that environmental commitment makes good economic sense. To remain competitive, destination areas are becoming highly involved in attracting environmentally oriented tourists, wherever they are found in the world, by careful analysis of, and response to, their values and needs. Hassan (2000: 240) indicated that: ‘Among destinations that achieve enviable growth rates, we find a strategic focus on environmental sustainability in tourism development’. Although the greening of tourism is a relatively new phenomenon in the private sector, there is widespread agreement that tourism businesses will produce and market more environmentally responsible products as the process of enhanced environmental awareness continues among broad segments of the population. Those businesses that do not take ecological concerns as part of their mission and marketing strategy in the next decade will experience declining sales (Jurowski & Olsen, 1995). According to Hassan (2000: 244): ‘If an attraction is promoting environmentally friendliness and is indeed practicing such claims, then it will experience a high degree of publicity and a high economic return’.

In spite of such assertions, the relationships between tourism destination competitiveness and environmental management have been discussed by only a few researchers. For example, Hassan (2000) stated that a destination’s commitment to the environment is one of the determinants of market competitiveness in a saturated marketplace. Mihalic (1999) held that destination competitiveness can be increased by expanded efforts related to environmental impact and environmental quality management as well as certain environmental marketing activities. Huybers and Bennet (2003) provided a framework (Figure 1) showing how environmental practices are able to enhance a nature-based destination’s competitiveness.

According to their views, environmental management at a nature-based destination includes a public and a private component. Firms’ environmental management measures are not merely reactions to externally imposed government regulations. Consumer demand is becoming an important stimulator. Firms and industries are becoming more willing to protect the environment because they are increasingly recognising the potential benefits to be gained from responding to such a market trend. Although costs associated with environmental practices can weaken an attraction’s or destination’s competitiveness and can be reflected in lower profits, environmental activities can also lead to demand increases both directly and indirectly.

The direct link pertains to the effect of prospective tourists’ preferences for visiting destinations where the environmental attractions are known to have a protected status. Tourists are drawn to a region because of its superior environmental attractions compared to other destinations. The indirect
link is established via the positive effect of environmental management on the quality of the destination’s environmental assets. (Huybers & Bennett, 2003: 215)

The destination’s competitiveness is strengthened through the increase in demand.

As discussed above, a tourist attraction is an economic entity operated in accordance with commercial principles. A tourist attraction’s competitiveness implies an ability to compete for profitability and/or market share with rivals. Although the logic of the link between environmental management and competitiveness exists at individual attractions, as well as for destinations, a conceptual framework at this level is lacking. Based on Huybers and Bennett’s (2003) work, a modified framework (Figure 2) has been created to address causal relationships at individual tourist attractions.

This framework indicates that there are three main factors driving a tourist attraction to be more environmentally responsible and to be willing to take environmental initiatives. These factors include complying with laws, increasing the numbers of visitors who are becoming more and more environmentally conscious in their travel decisions, and meeting investors’ funding criteria. In Huybers and Bennett’s (2003) model, it is recognised that environmental management has associated costs. However, this is only one side of the coin. On the other side, environmental practices can also result in cost reductions. By reducing, reusing and recycling all kinds of energy and resources, operational costs can be lowered and substantial savings can be gained. Indeed, cost savings are often economically attractive and, in most cases, are the major impetus behind the development of many voluntary programmes (Mihalic, 1999). This point has been widely documented (Goeldner et al., 2000). Thus, a tourist attrac-
tion does not necessarily experience a decrease in competitiveness when taking environmental measures. At the same time, demand may increase and the implementation of environmental initiatives may help to create and maintain a good relationship with local authorities and local communities. Especially when publicised by the media, such enterprises will obtain a positive image in the eyes of the public and an edge over competitors. Moreover, enhanced political support may increase priority in terms of tax remittal or project-financing loans. Furthermore, an environmentally benign attraction will have greater opportunity to attract outside investment (Forsyth, 1995; Middleton & Hawkins, 1998; UNEP, 1995). All these positive influences engendered by good environmental practices contribute to the overall competitiveness of a tourist attraction.

Methods

The above observations and framework were developed on the basis of an assessment of the literature. In the following part of this paper, the development and environmental initiatives of the Nanshan Cultural Tourism Zone (NCTZ), a privately owned tourist attraction in Hainan, China, are examined in order to illustrate many of the points that have been made above. The authors report the steps that were taken to promote environmental quality and to create a positive environmental image for NCTZ, the latter being a major component of the creation of a competitive tourism attraction. As a former employee of the company, the first author was involved in the record keeping and documentation of many of the events as they occurred. The case study is based primarily upon a subsequent analysis of the company’s internal documents, supplemented by interviews with company managers and staff, local government officials and local experts, conducted in summer 2002.

Figure 2 Environmental management and the competitiveness of a tourist attraction

Source: Modified from Huybers and Bennett 2003
The adoption of an environmental management system of the type promulgated by the International Standards Organisation, as was done by NCTZ, does not automatically result in the creation of a high quality environment. However, it does reflect a commitment on the part of managers to strive to operate in an environmentally sensitive manner and to monitor the results. Independent measures of land, air or water quality were not taken by the authors although we were informed by both attraction managers and governmental representatives that all standards were being met. In addition to the interviews conducted with employees at NCTZ, managers and employees at other attractions in Hainan were also interviewed concerning their impressions of the site and its management, although these data are not reported here. Interviews were not conducted with tourists or with local residents; such approaches may provide potential avenues for future research.

**Nanshan Cultural Tourism Zone**

**Background information about NCTZ**

NCTZ is located 40 km west of Sanya City and is the most visited tourist attraction on Hainan Island, China. Hainan, comprising about 34,000 km² of land area and 2 million km² of ocean, is situated in the southernmost part of China. The Qiongzhou Strait, about 24 km wide, separates Hainan from Guangdong Province on the mainland. It faces Vietnam across the North Bay to the west, and Malaysia and Indonesia across the South China Sea to the south. Hainan has a marine tropical monsoon climate with an annual average temperature ranging from 22–26°C and annual precipitation of 15–20 cm. More than 300 days per year are sunny, making it a good place for escaping cold weather, relieving summer heat, holidays and travelling all year around (Hainan Province Tourism Bureau – HPTB, 2001). Hainan is abundant in tourism resources. Its coastline extends for 1528 km, offering more than 60 different beaches. The beautiful tropical landscape, marine areas suitable for diving and water sports, golf courses, hot springs, botanic and tropical gardens, volcanoes and caves, historic and religious sites, the unique lifestyles of the ethnic minority groups, and the province’s cuisine attract domestic and a small number of foreign tourists (HPTB, 2001). Since Hainan Province was founded and, at the same time, became a ‘Special Economic Zone’ in 1988, tourism has been developed rapidly. From 1988 to 1998, tourism grew at an average rate of 35% each year. Tourism income increased at 85% per annum. In 2001, the province welcomed 11.3 million tourists (this official number of tourist arrivals was calculated based on hotel registrations, which might be larger than the real figure by as much as one third). Tourism-related income amounted to RMB8.79 billion (US$1.1 billion), increasing by 10.2% over 2000 and tourism constituted 15.4% of the province’s GDP (Hainan Tourism Yearbook, 2000, 2001).

There are more than 80 developed tourist attractions in Hainan and NCTZ is one of the newest and most visited of these (HPTB, 2001). NCTZ covers about 31 km² of land space and 19 km² of sea. It was planned and is being developed into a large-scale, environmentally friendly tourist destination featuring Chinese traditional cultures. Started in late 1995, the whole project is expected to be completed in eight to ten years with an intended investment of RMB 6 billion (US$ 0.72 billion). Given the huge amount of proposed investment and the length of time
required for the project construction, the management adopted the approach of ‘phased construction and rolling development’ to relieve pressure on capital and manpower. Under such a principle, NCTZ opened to the public in April 1998 when its first phase of construction was in place. So far, the completed part of the project includes a Buddhist culture park, a Taoist culture park, an ecological restoration garden, a vegetarian food restaurant, trendy tree houses, a small hotel and private villas. Hainan Nanshan Tourism Development Ltd (hereinafter referred to as Nanshan Company), registered in 1995, is the project initiator and the exclusive owner, developer as well as operator of NCTZ. Nanshan Company was established jointly by shareholders of one local state-owned assets management company and five private enterprises based in the Chinese mainland, Hong Kong and the United States. The company is a profit-making enterprise and it is operating on commercial principles.

Li (2003) has also discussed the tourism development at Nanshan. He has questioned the authenticity of the attraction given the religions that are represented in the development. He has drawn attention to the challenges of developing a large resort in a location with a limited water supply. He has also questioned the merits of using introduced species for landscaping purposes. These are all legitimate concerns. Also, the relationships between the attraction and surrounding communities are worthy of investigation although, given the relatively small population on the site and in the surrounding area, these issues are less acute than elsewhere in Hainan (Wang & Wall, in press a, b).

In order to provide a clear explanation of NCTZ’s environmental management activities along with its development process, a chronological timeline concerning NCTZ’s main development and environmental events is presented in Table 2. In this table, it is clear at a glance when and how NCTZ incorporated environmental concerns along with its growth. Further, this timeline presents and facilitates understanding of the developer/operators’ motivations behind their environmental actions, and the interactions between environmental management and increased tourism competitiveness.

NCTZ’s Environmental Management Practice

Driving forces for NCTZ’s environmental initiatives

In the NCTZ case, two main forces drove the management to take environmental measures. One was the Government’s environmental regulations and the other was NCTZ’s developers’ and managers’ analysis, foresight and judgements on the globally attention-gaining environmental issue and its influence on tourism market trends. In 1995, tourism was still depicted in Chinese textbooks as a smoke-free industry and its environmental impacts had not been widely acknowledged. Driven by pure economic motives, tourist developers/managers were in a rush to develop new attractions, often without a full understanding of the fragility of ecosystems and the importance of natural resources development in the long run (Xu, 1999). However, as environmental problems became increasingly apparent throughout the planet, the developers judged that environmental issues would soon become the public’s concern in China and that Chinese industries, inevitably, had to react to this new situation. In this context, the theme of ecology–tourism integration was regarded as one of NCTZ’s basic planning and
## Table 2 NCTZ development timeline

<table>
<thead>
<tr>
<th>Time</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1995</td>
<td>Government approval of Nanshan Project</td>
</tr>
<tr>
<td>November 1995</td>
<td>Ground-breaking ceremony for Nanshan Temple, representing the formal start of NCTZ’s construction (the first phase of the project focused on the construction of the Buddhist culture park and the entire work began with environmental rehabilitation)</td>
</tr>
<tr>
<td>November 1996</td>
<td>Designated as an Environmental Conservation Zone by Sanya Municipal Government</td>
</tr>
<tr>
<td>July 1997</td>
<td>Completion of the Project Feasibility Study Report</td>
</tr>
<tr>
<td>July 1997</td>
<td>Completion of Environmental Impacts Statement</td>
</tr>
<tr>
<td>July 1997</td>
<td>Awarded ‘Model Project of Ecological Environmental Restoration and Protection’ by Hainan Provincial Department of Land, Environment and Resources</td>
</tr>
<tr>
<td>July 1997</td>
<td>Signed with Hainan Provincial Department of Land, Environment and Resources the ‘Agreement on Joint Construction-Management of Ecological Environmental Restoration and Protection Project in Nanshan Cultural Tourism Zone’</td>
</tr>
<tr>
<td>September 1997</td>
<td>Government approval of NCTZ Master Plan</td>
</tr>
<tr>
<td>October 1997</td>
<td>Awarded ‘Hainan Provincial Educational Base of Environmental Conservation’ by Hainan Provincial Education Department</td>
</tr>
<tr>
<td>February 1998</td>
<td>Start-up of the establishment of EMS (began with deliberation on introducing ISO 14001 under guidance of the local government and China Environment Science Academy)</td>
</tr>
<tr>
<td>April 1998</td>
<td>Opening to the public (completion of the first phase of project construction and commencement of the second phase of construction)</td>
</tr>
<tr>
<td>April 1998</td>
<td>Completion of Nanshan Sewage Treatment Plant</td>
</tr>
<tr>
<td>April 1998</td>
<td>Awarded ‘Hainan Provincial Model Ecotourism Site’ by Hainan Provincial Tourism Bureau</td>
</tr>
<tr>
<td>April 1998</td>
<td>Awarded ‘Hainan Provincial Model Protection of Ecological Construction’ by Hainan Provincial Department of Environmental Resource</td>
</tr>
<tr>
<td>May 1998</td>
<td>Appraised as one of the ‘Prestigious Tourist Attractions in Sanya City’</td>
</tr>
<tr>
<td>September 1998</td>
<td>Establishment of EMS and pilot running of ISO 14001</td>
</tr>
<tr>
<td>November 1998</td>
<td>Defined as one of the China priority tourism development projects</td>
</tr>
<tr>
<td>January 1999</td>
<td>Certificated by ISO 14001</td>
</tr>
<tr>
<td>July 2000</td>
<td>Certificated by ISO 9000</td>
</tr>
<tr>
<td>May 2001</td>
<td>Establishment of Nanshan Air Quality Monitoring Station</td>
</tr>
</tbody>
</table>

design principles, and was also highlighted as a marketing strategy. Reflected in the NCTZ Project Feasibility Study Report (1997c), there is an entire chapter entitled ‘Market Promotion of the Project’ that discusses potential market advantages and opportunities brought to NCTZ by positioning this attraction as a combination of ecology and culture. It says: ‘At the turn of the 21st century, people show great passion for a good ecological environment… NCTZ’s theme is clear and touches upon the pulse of the present era, appealing to the demands of modern people’ (p.142); ‘… the rising trend of durable development and the advent of ecological tourism will bring great development space and an excellent marketing opportunity for Nanshan which takes ecology as its theme’ (p.143). The developer/operator’s concerns for the environment are also indicated in NCTZ’s Project Environmental Impacts Statement (1997a), a document required by government in the project review and approval process in Hainan. In this report, the influence of the NCTZ project on the local environment was analysed comprehensively.

NCTZ’s environmental management efforts

NCTZ’s environmental management efforts were exhibited in the work of environmental rehabilitation, in day-to-day environmental practices and in the establishment and implementation of an Environmental Management System (EMS) with the adoption of ISO 14001.

When the NCTZ project started in late 1995, the planned development area was barren and deserted. It was necessary to improve the physical appearance of the project area. Large amounts of effort, manpower and money were first spent on ecological rehabilitation. Of the 350 million yuan (US$43 million) total investment during the first phase of the project, 60 million yuan (US$7.2 million) was used for restoration work (Financial Department Statistics, 1998) (NCTZ, 1998–2002). While maintaining the existing trees and bushes, the developer introduced some 230 plant species, including 10,000 trees, 100,000 shrubs, 100,000 potted flowers and 350,000 m² of turf. Artificial lakes were built to irrigate the plants and to attract wild animals and birds (NCTZ internal documents). At the same time, through the efforts of Nanshan management, the NCTZ project area was designated by the municipal government as an environmental conservation zone, within which quarrying, deforestation and burning grass on waste land were forbidden (SMG, 1996, 1998). Forest guards and a planting team were set up to facilitate afforestation. To make the facility more attractive, much work was done on gardening and landscaping. As a result, the environment was enhanced and beautified; biodiversity was preserved and, remarkably, even improved. At present, NCTZ has a green coverage rate of 97% (according to the key informants and also Hainan Provincial Department of Land, Environment and Resources [HLER] unpublished documents, 2002).

In addition to restoring and maintaining flora and fauna, the main practices being implemented in NCTZ include the following.

Efficient use of energy and materials

To economise on energy and materials, NCTZ installed a solar heating system in its hotel and purchased ecological toilets for public use which work by microbial degradation and avoid water consumption. Wind is used as natural air
conditioning in the lobby of the hotel. Office staff are required to use paper sheets efficiently – to write or print on both sides. In addition, the Nanshan Company encourages all staff to save fresh water, electricity, fuel and other materials.

**Waste management**

For the purpose of managing solid waste, a sorting system has been adopted. Garbage cans are marked for recoverable (glass bottles, tins, etc.) or non-recoverable (plastic, house refuse, etc.) waste. By using these bins, solid waste is sorted initially by tourists. It is then carried to the NCTZ's waste sorting station to be classified further. After that, it is conveyed to the city’s refuse disposal plant. As for liquid waste, a sewage farm with a treatment capacity of 800 tons of waste water per day has been constructed. All of the treated purified water is being used to irrigate the garden. The interviewees expressed the view that they got a double advantage by doing so. On the one hand, they are successfully keeping the sea area and beach free from pollution; on the other hand, this strategy relieves pressure across the whole attraction area on water demand, especially in dry seasons.

**Control and reduction of air pollution**

In an effort to reduce air pollution, NCTZ uses battery electric vehicles as main means for internal transportation. Thus, no tail gas is produced. At the same time, non-Fl (fluorine) air conditioners and non-Fl refrigerators have been adopted. In April 2002, NCTZ was identified by Sanya Environment Protection Bureau as a non-Fl tourist attraction. In addition, it is forbidden to burn wastes in NCTZ. For the purpose of maintaining high air quality, an air quality monitoring station has been built in the attraction.

**Control and reduction of noise pollution**

Motor vehicles are not normally allowed to enter the attraction area. In the case of any exceptions, honking of horns is restricted. The use of accumulator vehicles also contributes to a reduced noise level.

**Protection of coastal areas**

The existing sewage treatment system guarantees that no waste water is discharged into the sea, according to the key informants. There is no development activity in or along the seashore except for the Hai Shang Guanyin project (statue of Goddess of Mercy located in the sea). This engineering was approved after scientific research and discussion.

**Storage and use of hazardous substances**

Highly-efficient and low-toxicity pesticide, and non-phosphorous detergents are purchased and used. There are always persons specially assigned to the task of safe keeping these substances.

**Regulation and accreditation**

NCTZ maintains an up-to-date register of relevant environmental law, policies, regulations and other requirements that have been carried out in the operation (NCTZ, various dates). For instance, in order to comply with the rule that environmental facilities be synchronously designed, constructed and operated (‘three synchronous’ policy), a sewage treatment plant and a waste-sorting station were designed and built along with the project construction, and then were put into use as soon as NCTZ opened to the public. In addition, an internal
and independent EMS was established voluntarily and has been implemented to ensure systematic and holistic management. The current EMS of NCTZ was established in September 1998 and the environmental standard of ISO 14001 was adopted on a voluntary basis. On 1 January 1999, NCTZ passed the certification test, which made it China’s first tourist attraction that had adopted ISO 14001 and been certificated (ZHB, 2002). In May 2000, it further succeeded in gaining ISO 9000 certification. An EMS provides a systematic approach which is capable of combining long-range environmental goals (words) with concrete conservation practices (actions) and is designed to ensure smooth and sequential implementation of these practices. This has occurred in NCTZ. According to the interviewees, the EMS enables the developer/operator of NCTZ to harmonise the corporate internal objectives, actions and management strategies with its external environment; ISO 14001 requires that all environmental work is carried out in orderly fashion and with a definite object in view; the standard requirements and strict examination procedures (internal auditing every six months and external auditing every year) guarantee full implementation of the environmental practices. Moreover, as an integral part of the company’s management mechanism, the EMS drives the attraction operator to be persistent on the way to environmentally sustainable development. Environmental managers in NCTZ have high positions. They are authorised to report to the president concerning environmental matters.

NCTZ’s environmental marketing strategies

As Mihalic (1999) pointed out, in order to increase competitiveness, destination managers must manage the quality of the destination. At the same time, they also need to manage the destination’s environmental image because the perceived environmental quality influences the buying of the potential visitors. A good environmental image increases the visitor’s expectations and caters to their preferences. From the very beginning, NCTZ’s developers/managers have spared no effort to create and showcase an environmentally friendly image to the public. As early as late 1996, the year following NCTZ’s startup, the management devised the concept of ‘Macro Ecology’, the main point being that tourism developers had to consider environmental impacts in order to ameliorate the consequences of global consumption trends. Then they devoted major efforts to propagandise it to the public in the expectation of building a distinctive and healthy public image for NCTZ quickly and, thus, to create marketing advantages. Gradually, the notion of ‘Macro Ecology’ has been enriched alongside NCTZ’s development. Prior to the establishment of its EMS, this concept evolved into the company’s Environmental Policy. In this policy, NCTZ pledges to protect Nanshan Mountain’s ecosystem and to protect its sea area as the attraction is developed. The policy was even written on a large bulletin board placed just in front of the entrance. By proclaiming and publicising its environmental commitment, NCTZ intends to give the public a good impression.

Increased Competitiveness through Environmental Management

Good environmental performance brings economic benefits to NCTZ both directly and indirectly. Direct economic benefits come from reduced operating
costs resulting from efficient use of energy and reduced consumption of materials like water and paper. In addition, reuse of waste water to irrigate the gardens and the building of artificial lakes to collect and store rain water also reduce operating expenditures. Moreover, for NCTZ, a series of preferences from government accompanied its many awards, such as the incentives of tax reduction, financial support and priority right of development. At the same time, the high social reputation brought considerable marketing advantages and, therefore, rapid economic growth to NCTZ. As shown in Table 3, NCTZ’s revenue and the number of visitors have grown steadily and substantially, and the net income has doubled each year. This, in turn, provided further impetus for the developers/managers to engage in voluntary protection of the environment on which their business ultimately relies.

Environmental management practices also resulted in great social benefits to NCTZ. NCTZ’s performance in environmental rehabilitation and conservation gained the attention of and great assistance from the local government. In July 1997, a formal agreement on ‘Joint Construction-Management of Ecological Environmental Restoration and Protection Project in Nanshan Cultural Tourism Zone’ was signed with Hainan Provincial Department of Land, Environment and Resources. Based on this, Nanshan Company received great policy support and technical services during the whole course of the project development. Moreover, a number of government plaudits were awarded to NCTZ, such as ‘Hainan Provincial Key Project’, ‘Model Project of Ecological Environmental Restoration and Protection’ and ‘Hainan Provincial Educational Base of Environment Conservation’ conferred in 1997; ‘Hainan Provincial Model Ecotourism Site’, ‘Hainan Provincial Model Project of Ecological Construction’ and ‘China’s Priority Tourism Development Project’ in 1998. As stated in the NCTZ Project Feasibility Study Report (1997c: 143): ‘in the past years, the development of NCTZ has gained great support from Hainan and Sanya Governments and it has been designated as one of the important tourism projects in Hainan Province . . . these provide incomparable advantages for the development of Nanshan’. Its earning of the certification of ISO 14001 further brought it a ‘dazzling halo’. NCTZ successfully built a healthy image to gain recognition by the public. A survey organised by Hainan Daily and Sanya Morning newspapers among residents living in Hainan Island before the Spring Festival of 2000 showed that among the listed 15 most welcoming tourist attractions (like Tian Ya Hai Jiao, Yalong Bay) within Hainan Island, NCTZ ranked the first.

### Table 3 Economic growth of NCTZ (unit: million)

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (RMB)</td>
<td>5.11</td>
<td>36.57</td>
<td>69.87</td>
<td>110.47</td>
<td>121.38</td>
</tr>
<tr>
<td>Net income (RMB)</td>
<td>deficit</td>
<td>0.72</td>
<td>1.51</td>
<td>3.09</td>
<td>7.57</td>
</tr>
<tr>
<td>Visitors</td>
<td>0.08</td>
<td>0.56</td>
<td>1.17</td>
<td>1.63</td>
<td>1.92</td>
</tr>
</tbody>
</table>

Discussion

Competitiveness ultimately involves the creation and exploitation of comparative advantages. Thus, the evaluation of competitiveness is best addressed through the undertaking of comparative studies. In this case, attention has been devoted exclusively to one site and the efforts of its managers to create an attraction which is distinctive and competitive in the context of other attractions in the province. In terms of the topics listed in Table 1, this paper has addressed corporate strategy in considerable detail. NCTZ offers a new and distinctive product in Hainan. It is newer, larger and presents different cultural experiences to the other cultural theme parks on the island which portray ethnic cultures (Xie & Wall, 2001). Although Hainan is renowned for its tropical environment in a country which faces acute environmental challenges, NCTZ is currently the only attraction in Hainan that has embraced environmental management and made it such a strong theme within its operational and marketing strategies. New entrants may also embrace environmentalism and it is hoped that they will. However, this is unlikely to undermine NCTZ’s competitive position. Rather, should such facilities be developed, they are likely to be complementary rather than competitive to NCTZ, contributing to the overall positive environmental image of Hainan, rather than undermining the competitive position of NCTZ.

Almost all tourists to Hainan are from mainland China and the great majority of them are on organised tours. Thus, currently the market is not highly differentiated and NCTZ has managed to attract a substantial proportion of this mass market. High penetration of this market and growing visitor numbers attest to the success of the marketing strategy. However, the capital costs of the establishment of the attraction have been high and ongoing operational expenditures will be large: answers to questions of ongoing sustainability on both economic and environmental dimensions await the test of time. Certainly, a rigorous cost–benefit analysis to ascertain if the capital costs of establishing an environmentally friendly undertaking are repaid in resulting operating efficiencies, marketing opportunities, market share and consequent profitability would be difficult to undertake and, perhaps, premature but will eventually be necessary to address critical questions concerning competitiveness and sustainability.

The case study presents information on a tourism attraction during its formation and in the first few years of its operation. Its competitiveness comes in part from its tropical setting, its religious theme and the fact that there are no other similar projects in Hainan at present. Certainly, its environmental management has helped it to become better known and gained it a positive press and reputation. It remains to be seen if a positive environmental reputation attraction can be maintained once this becomes a part of routine activities and if it will be sufficient to maintain a competitive edge.

Figure 2 has proved to be a simple but useful framework to structure some of the ideas presented in this paper. The environmental management initiatives that have been discussed were implemented voluntarily but within a governmental regulatory framework and they involved commitment of money and personnel in the hope of achieving both environmental and financial gains. It was believed that a product that provided high quality environmental experiences would require increased initial investment but would gain increased
market penetration, ensure the environmental sustainability of the resources and also promote positive public relationships, as seen in the establishment of supportive links with government and a positive public image. These things, in turn, would enhance competitiveness.

Conclusion

As a vital component in the tourism system, tourist attractions require research attention. A tourist attraction’s competitiveness implies its ability to compete for profitability with rivals. For most tourist attractions, their profitability relies partly on the attractiveness of environmental resources. Conventionally, tourist enterprises have been considered to implement environmental measures primarily under the pressure of governmental regulations. However, environmental issues have increasingly attracted the public’s attention and are influencing visitors’ destination decision making. Tourism developers/managers are becoming aware that their competitiveness can be increased by creating or maintaining good environmental quality through management efforts. Sometimes, they have to do so to meet investors’ criteria. NCTZ is such a successful example. In NCTZ, the implemented environmental management and marketing activities have resulted in the speedy and successful acquisition of an environmentally friendly image, cost savings, rapidly growing visitor numbers and profitability, good public relations and substantial investment. All of these have contributed to the creation and enhancement of NCTZ’s competitiveness.

Acknowledgements

The research was funded, in part, by the Canadian International Development Agency through the Canada Higher Education Program in collaboration with the Hainan Department of Land, Environment and Resources, Nanjing University, Guelph and Wilfrid Laurier Universities, under the leadership of the University of Waterloo.

Correspondence

Any correspondence should be directed to Ms Wei Hu, Department of Geography, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada (whu@fes.uwaterloo.ca).

References


Nanshan Cultural Tourism Zone (1997a) *Project Environmental Impacts Statement*.

Nanshan Cultural Tourism Zone (1997b) *Master Plan* (compact edn).

Nanshan Cultural Tourism Zone (1997c) *Project Feasibility Study Report*.


Nanshan Cultural Tourism Zone (various dates) *Environmental Management System Documents*.


