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Memorable nature-based tourism experience, place attachment and tourists' environmentally responsible behaviour

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Memorable nature-based tourism experience, place attachment and tourists' environmentally responsible behaviour

Abstract

During the COVID-19 pandemic, there has been an increased emphasis on domestic travel and forms of sustainable tourism, such as nature-based tourism, due to social distancing and travel-related safety measures. This study tests a new model for memorable nature-based tourism experiences by examining the effects of novelty, experiencescape, experience co-creation, experience intensification and satisfaction. The study also examines the relationship between memorable nature-based tourism experiences, place attachment and tourists' environmentally responsible behaviour. Data were gathered from tourists who visited a national park within the three months preceding the data collection period (January–March 2021) using an online survey questionnaire distributed through Amazon Mechanical Turk (MTurk) in March 2021. This study's main contributions include the expansion of the memorable tourism experience construct and the inclusion of four key variables that influence place attachment in the formation of tourists' memorable nature-based tourism experiences. The relationship between place attachment and tourists' environmentally responsible behaviour was also shown to be significant.

Keywords: memorable nature-based tourism experience, place attachment, tourists' environmentally responsible behaviour, MTurk

Introduction

The COVID-19 pandemic has adversely affected the global tourism and hospitality industry, and many travel and tourism service providers have struggled financially under mandatory travel restrictions and government-ordered lockdowns (Skare, Soriano & Porada-Rochon, 2021). Travel booking volume plunged rapidly, as many travellers cancelled their trips when the pandemic began in early 2020, and the global tourism industry shrank by more than 50% in 2020 (Canh & Thanh, 2020). As a direct consequence of the COVID-19 pandemic, tourists have turned their attention towards domestic travel. This has necessitated a comprehensive understanding of the current domestic tourism market (Gössling, Scott & Hall, 2021).

Tourists have long been attracted to natural sites and attractions, undertaking outdoor and recreational activities and immersing themselves in nature (Line & Costen, 2017). In many countries, nature-based tourism (NBT) increased significantly during the COVID-19 pandemic; for example, national parks saw an increased number of visitors in Finland (Metsähallitus, 2021). NBT refers to travel motivated totally or partially by interest in natural destinations' beauty and history, in which visits combine education, recreation and often adventure (Mehmetoglu & Normann, 2013). For example, driving to a scenic mountain lookout or walking through botanical gardens could all be classified as NBT experiences (Matysek & Kriwoken, 2003).

Today, tourists must be offered MTEs for an attraction or site to gain a sustainable competitive advantage (Sthapit, Björk & Jiménez Barreto, 2020). For this reason, destination managers must develop tourism programmes that facilitate MTEs (Sthapit, Coudounaris & Björk, 2019). Recent studies have indicated that understanding the factors that create MTEs is critical to the success of destination management (Wei, Zhao, Zhang & Huang, 2019), but a large part of the literature elaborating on the MTE construct has been devoted to direct replication in new contexts (Sthapit et al., 2019), and few studies have incorporated other constructs that might explicitly impact the MTE construct (Zhang, Wu & Buhalis, 2018). Given that MTE is a multifaceted concept, little agreement exists regarding the theoretical frameworks applicable to the specific constructs comprising an MTE (Sthapit & Jiménez-Barreto, 2018). Furthermore,

existing studies on MTEs are vague and fragmented (Chandralal, Rindfleish & Valenzuela, 2015; Zhang et al., 2018).

Research on MTEs, particularly their antecedents and consequences, has received inadequate attention in the NBT literature (Weiler & Chen, 2016). In addition, recent studies have indicated that numerous advantages can be gained for tourism service providers that foster MTEs (Sthapit & Jiménez-Barreto, 2018). For example, travellers who have MTEs at a destination are more likely to revisit the destination (Zhang et al., 2018) and develop a personal bond with a place (Tsai, 2016). Some recent studies have also suggested the need to identify other decisive antecedents that impact tourists' MTEs because Kim et al.'s original seven MTE dimensions may not be applicable to specific contexts (Sthapit et al., 2019; Stone et al., 2019)—in this case, memorable NBT tourism experiences.

The present study seeks to fill this research gap by discussing related theoretical arguments and concepts while testing a new conceptual model that defines the elements constituting a memorable NBT experience. *Novelty* in tourism refers to the search for new or different tourism experiences, novel stimuli, risks and new environments (Lee & Crompton, 1992). Novelty is a crucial element of a tourist's motivation to travel and influences their decision-making (Petrick, 2002). Furthermore, novelty forms a core input for memories (Kim et al., 2010).

Experiencescape is a term used to describe the environment in which consumers interact to create their own experiences (Mossberg, 2007). The term has a wider meaning and represents a blend of many elements (both physical and imagined). Specifically, experiencescapes 'are spaces of pleasure, enjoyment and entertainment, as well as the meeting grounds in which diverse groups move about and come in contact with one another' (O'Dell, 2005, p. 16). Some studies have indicated that the experiencescape can directly influence memorability (Mathis et al., 2016).

Experience co-creation involves interactions between tourists and the service provider in the experience environment (Cutler & Carmichael, 2010). In the tourism industry, creating MTEs through experience co-creation is vitally important (Mathis, Kim, Uysal, Sirgy & Prebensen, 2016), and memorability is an outcome of experience co-creation (Campos, Mendes, Valle & Scott, 2016).

Experience intensification refers to visitor intention to extend the experience (Holbrook & Gardner, 1998) by making the experience more tangible through photos (Dong & Siu, 2013). Photos act as valuable stimuli that allow individuals to recollect information stored in their long-term memory (Caton & Santos, 2008). Some studies have indicated that experience intensification, for example, through photos, prolongs tourists' MTEs (Sthapit & Björk, 2019).

Satisfaction is defined as the outcome of the difference between what is expected and what has been experienced (Chen & Chen, 2010). Specifically, a tourist is satisfied if a feeling of pleasure—a positive, memorable feeling—results from a positive comparison of his or her expectations and experiences upon leaving a destination (Su, Cheng & Huang, 2011).

Place attachment represents the bonds that people develop with places (Gross & Brown, 2008). Such bonds produce 'the sense of physically being and feeling "in place" or "at home"' (Yuksel et al., 2010, p. 275). Some studies have indicated a positive relationship between MTEs and place attachment (Loureiro, 2014; Tsai, 2016).

Studies have indicated that when tourists develop place attachments, they tend to have a positive attitude and exhibit responsible behaviour towards the environment (Kyle, Absher & Graefe, 2003; Kyle, Bricker, Graefe & Wickham, 2004), and place attachment is an antecedent to tourists' environmentally responsible behaviour (Cheng, Wu & Huang, 2013).

This study aims to propose an integrative conceptual model of memorable NBT that integrates five main antecedents (novelty, experiencescape, experience co-creation, experience intensification and satisfaction) and one outcome variable (place attachment). This study also examines how place attachment impacts tourists' environmentally responsible behaviour, adding to ongoing research on factors driving environmentally sustainable tourist behaviour.

Research hypotheses and framework

This section briefly explains the eight key constructs used in this study. Figure 1 shows the conceptual framework of this study.

Figure 1

Novelty

Novelty is defined as the 'degree of contrast between present perception and past experience, making it the opposite of familiarity' (Assaker, Vinzi & O'Connor, 2011, p. 891). Others have defined novelty as a feeling of being new, unique and unusual in experience (Cheng & Lu, 2013). For nature-based tourists, the search for novelty is arguably essential (Mehmetoglu, 2005), with their attention focused on the physical characteristics of nature itself (Wen & Ximing, 2008). Novelty, then, is connected to the tourist gaze and represents natural beauty (Hammer, 2008) that differs from one's usual surroundings (King, 2002).

Novelty significantly affects tourists' future behavioural intentions (i.e., revisits, repractice and word-of-mouth behaviours) (Ondrej & Marcel, 2018). However, novelty not only entails tourism motivations but is also a factor that affects memorability (Wei et al., 2019). Novelty has been identified as a precursor to enjoyment (Mitas & Bastiaansen, 2018) and MTEs (Wei et al., 2019), and the concept is fundamental to understanding tourism experiences (Mitas & Bastiaansen, 2018) and ways to market memorable experiences (Zhong, Busser & Baloglu, 2017). According to Chandralal et al. (2015), novelty is closely associated with MTEs and how novel, distinctive and atypical tourism experiences, rather than more usual and common tourism experiences, tend to be more memorable for travellers. Therefore, we propose the following hypothesis:

H1: Novelty positively influences memorable NBT experiences.

Experiencescape

NBT is often characterised by intense experiences derived from various activities in nature; that is, natural resources become a vital feature of service delivery (Arnould & Price, 1993). Several factors affect NBT experiences, including scenery, wildlife, novel occurrences and social interactions (Farber & Hall, 2007), also referred to as the experiencescape (O'Dell, 2005). Tourists interact with the experiencescape's elements on an individual basis (Reis, 2012). O'Dell (2005) defined the experiencescape as a place where human interactions, pleasure, entertainment and enjoyment can occur to create an experience, with an emphasis on the exchange of experiences and experience creation (Mei, Hågensen & Kristiansen, 2018). Thus, the experiencescape influences how tourists live the experience (Campos, Mendes, Valle & Scott, 2018).

An experiencescape is more than the physical environment, as understood in the servicescape, because consumption that occurs within physical and social surroundings offers hedonic benefits (Mossberg, 2007). Thus, the experiencescape is often interpreted as a more complex extension of the servicescape, comprising components and environments beyond the tourism provider's control (Nikoline, Dybsand & Fredman, 2020). This complexity characterises NBT (Margaryan, 2018). Natural resources and associated environments—such as wildlife, weather conditions and landscape features—are less controllable than environments created by humans, such as hotels. Customers' positive perceptions of an experiencescape's physical and personal dimensions lead to a high evaluation of the customer experience (Dong & Siu, 2013). Furthermore, the experiencescape can directly influence memorability (Mathis et al., 2016). Thus, we propose the following hypothesis:

H2: An experiencescape positively influences memorable NBT experiences.

Experience co-creation

According to Vargo and Lusch (2004), the customer is not a passive recipient of pre-existing value but is always an active creator of value; that is, tourists acquire a more active role in deciding what to do during the journey, interacting with tourism service providers at the destination, influencing other tourists and choosing how to satisfy all aspects of their personality and all their needs (Mathis et al., 2016). In the NBT experience context, tourists' participation in experience co-creation may include interactions with frontline employees, such as guides and service staff (Grönroos & Gummerus, 2014), and other tourists (Malone, McKechnie & Tynan, 2017). Interactions between frontline tourism providers and tourists greatly impact an individual tourist's evaluation of a tourism experience (McCartney & Chen, 2020).

Through the concept of experience co-creation, with a greater emphasis on the customer than on the service, marketing organisations have moved from a goods-dominant approach to a service-dominant (S-D) approach (Mathis et al., 2016). S-D logic views co-creation in terms of participatory, interactive activities that involve different actors, while *value* is defined as 'value-in-use', that is, 'the value for customers, created by them during their usage of resources' (Grönroos & Gummerus, 2014, p. 209). S-D logic suggests that customers play an active role alongside the service provider in co-creating experiences and value, and establishing dialogue is a prerequisite for experiencing co-creation (Mathis et al., 2016). From an experience co-creation perspective, customers are active contributors in co-creating their individual experiences, necessitating personalised and direct interactions with the service provider (Prahalad & Ramaswamy, 2004). In the tourism industry, creating memorable experiences through experience co-creation is crucial (Mathis et al., 2016), and memorability is viewed as an outcome of experience co-creation (Campos, Mendes, Valle & Scott, 2017). Thus, we propose the following hypothesis:

H3: Experience co-creation positively influences memorable NBT experiences.

Experience intensification

Social media platforms have become popular tools that allow for the on-site intensification and memorialisation of travel experiences through the posting of photos online (Zeng & Gerritsen, 2014). Due to individuals' increasing empowerment through information and communications technology, tourism experiences have intensified and multiplied, creating richer experiences (Gretzel & Jamal, 2009). Social media platforms have permitted tourists to digitise and share emotions and experiential moments far more widely than in the past (Jacobsen & Munar, 2012). These platforms have increased the prevalence of real-time recordings and the sharing of tourism experiences, as well as intensified tourism experiences. Tourists can create their experiences online over different time horizons (Berger & Schwartz, 2011).

Today, tourists often augment their experiences and attempt to make them more tangible by taking photos (Dong & Siu, 2013). Photography and travel are intrinsically linked (Lo, McKercher, Lo, Cheung & Law, 2011). Photographs both document and shape the travel experience (Haldrup & Larsen, 2003). Edensor (2000) proposed that photographs are a ceremonial mechanism that endorses relationships with others and other cultures. The acts of taking a picture and sharing it can both happen at any moment in the tourism experience (Prideaux, Lee & Tsang, 2018). Many pictures are taken using smartphones and shared online through social media apps designed to capture, modify and share pictures. Natural settings provide backdrops for the perfect photo, enhancing the visitor experience (Phi & Dredge, 2019). Other popular social media platforms, such as Facebook, Twitter and LinkedIn, also offer photography features. These apps help tourists capture, interpret and express something meaningful about being in a specific place in relation to themselves and their lifeworld by sharing it in a digital context (Conti & Heldt Cassel, 2019). Aside from taking photos for the sake of

creating and enhancing tourists' memories of their trip, posting these pictures online is an inherently social act (Weilenmann & Hillman, 2020). Recent studies have indicated that experience intensification can prolong the memorability of the tourism experience (Sthapit et al., 2019). Thus, we propose the following hypothesis:

H4: Experience intensification positively influences the memorable NBT experience.

Satisfaction

Beard and Ragheb (1980) defined *tourist satisfaction* as the positive perception that tourists develop by engaging in recreational activities, which can be measured through different degrees of pleasure. When the destination attribute satisfies visitors' needs and wants, tourists have pleasant experiences (Lee, 2009). In other words, a tourist is satisfied if the outcome of a comparison between their expectations and experiences is a feeling of pleasure—specifically, a positive, memorable feeling—upon leaving a destination (Su et al., 2011). In this study, satisfaction with a single NBT activity or NBT service is defined through the concept of transaction-specific satisfaction, specifically as 'the consumer's [tourist's] (dis)satisfaction with a discrete service encounter' (Jones & Suh, 2000, p. 148). In other words, satisfaction is linked to the evaluation of a single experience.

Satisfaction is a particularly important consideration in NBT, as satisfaction scores are used as a measure of a provided service's success or failure in offering a high-quality visitor experience (Coghlan, 2012), and the profitability of NBT operators relies on being able to give customers a consistently high-quality experience (McKercher & Robbins, 1998). Satisfaction is commonly viewed as a joint goal that brings together the other goals of sustainable businesses, such as increased support for conservation or revenue from visitor fees (Coghlan, 2012). Some studies have identified satisfaction as an antecedent of MTE (Sthapit, Del Chiappa, Coudounaris & Björk, 2019). Thus, we propose the following hypothesis:

H5: Satisfaction positively influences memorable NBT experiences.

Memorable nature-based tourism experiences and place attachment

According to Kim and Chen (2019), MTEs are highly self-centred and viewed as special, subjective events in one's life that are stored in the long-term memory, while others define *MTE* as a 'tourism experience positively remembered and recalled after the event has occurred' (Kim et al., 2012, p. 13). In this study's context, a memorable NBT experience refers to one that is remembered and recalled in vivid detail after an *in situ* NBT experience and can include both positive and negative aspects. MTEs have been identified as an antecedent to place attachment (Sthapit, Björk & Coudounaris, 2017). Studies have found a positive relationship between memories of a trip experience and place attachment (Loureiro, 2014), including Tsai's (2016) study of tourists in Taiwan, which found a direct, positive impact of MTEs on place attachment.

Place attachment is an attitudinal emotional response and perceived proximity to a place (Hummon, 1992) that can be formed through functional, tangible factors and social relationships (Lewicka, 2011) of a co-creative nature (Suntikul & Jachna, 2016). Williams and Vaske (2003) proposed a scale to measure place attachment through two dimensions: place identity and place dependence. *Place identity* represents a place's symbolic importance as a backdrop for individuals' emotional or social relationships. *Place dependence* addresses functional or physical bonding to a place and reflects how important the place is in pursuing desired goals or activities (Williams & Vaske, 2003). The justification for studying place attachment is that social and environmental psychology studies have suggested that the way people perceive their physical environment and the established bonds with it greatly influence their behaviours (Devine-Wright

& Howes, 2010; Larson, De Freitas, & Hicks, 2013), including environmentally responsible behaviours (Scannell & Gifford, 2010). Thus, we propose the following hypothesis:

H6: Memorable NBT experiences positively influence tourist place attachment.

Tourists' environmentally responsible behaviours

Sustainable development is a growing global issue, and environmentally responsible behaviour is closely linked to the achievement of sustainable development (Dolnicar & Grun, 2009; Kim, Kim & Thapa, 2018; Ramkissoon, Weiler & Smith, 2012). Environmentally responsible behaviour is described as any behaviour an individual undertakes to conserve personal environments and solve environmental problems (Schultz, 2000). Tourists' environmentally responsible behaviour (TERB) refers to various actions that tourists undertake to reduce or avoid negative effects on the natural environment from their time spent at these destinations (Lee, Jan & Huang, 2015). TERB has been generally applied interchangeably to tourists' pro-environmental behaviour in the extant literature (Li & Wu, 2020). Such behaviours, which are the result of humans' interactions with the environment through tourism activities (Wang, Zhang, Yu & Hu, 2018), are of critical importance to both tourism destinations' environmental sustainability and the tourism industry's sustainability (Dolnicar & Grun, 2009). When individuals have attachments to specific locations, they will care about the environment and will be concerned with issues of environmental protection (Carr, 2002; Pooley & O'Connor, 2000). Some studies have found that place attachment is an antecedent to TERB (Cheng et al., 2013). This study assumed that when tourists care for, show respect for and have high levels of attachment to a destination, they will likely tend to demonstrate positive TERB. Thus, we propose the following hypothesis:

H7: Place attachment impacts TERB significantly and directly.

Methods

Data collection method and instrumentation

For this study, a quantitative approach was chosen, and a cross-sectional survey design was employed. An empirical study was conducted using an online survey questionnaire. The unit of analysis was tourists aged >18 years who had visited a national park within the three months preceding the data collection period (January–March 2021). Convenience sampling was used because it is cost-effective, efficient and simple to implement. The authors acknowledge that the key disadvantage of this sampling technique is that the sample lacks clear generalisability.

The survey comprised two sections. The first section included demographic variables and travel characteristics. The second section comprised eight constructs that measured novelty, experiencescape, experience co-creation, experience intensification, satisfaction, memorable NBT experience, place attachment and environmentally responsible behaviour. Novelty comprised four items adapted from Sthapit, Del Chiappa, Coudounaris and Björk (2019). Five items were used to measure the experiencescape and were adapted from Pizam and Tasci (2019). The study measured experience co-creation using five items adapted from Mathis et al. (2016). Experience intensification was measured using three items adapted from Dong and Siu (2013). Satisfaction comprised three items adapted from Oh et al. (2007) and Quadri-Felitti and Fiore (2013). Memorable NBT experience was operationalised using three items adapted from Oh, Fiore and Jeoung (2007). Place attachment was measured by adapting the Place Attachment Inventory (PAI) by Williams and Vaske (2003) using four items. TERB was measured using a five-item scale modified from other scales designed by Cheng et al. (2013), Chiu, Lee and Chen (2014) and Su and Swanson (2017). Altogether, the study used 32 items, and the response options followed a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree (Table

1). All eight constructs used in the conceptual model (see Figure 1) are explained in Table 1. All methods, such as structural equation modelling, can be replicated using the same data set.

Table 1

To reduce the potential for errors, the authors pre-tested the questionnaire with five tourism researchers in February 2021 to confirm the relevance, clarity, flow and phrasing of the questions. It was estimated that each questionnaire could be completed within 10 minutes. Consequently, the survey participants had no complaints about its length.

The survey was distributed in March 2021 using Amazon Mechanical Turk (MTurk), an online crowdsourcing platform. MTurk is a crowdsourcing marketplace that allows individuals (Turkers) to complete human intelligence tasks (HITs). Turkers tend to be demographically more diverse than conventional internet sample populations, and the data obtained are generally as reliable as information collected via traditional methods (Buhrmester, Kwang & Gosling, 2011). According to Goodman, Cryder and Cheema (2013), MTurk offers an inexpensive data collection method that produces high-quality data and reliable results. Despite critiques of MTurk sampling leaning towards relatively educated and younger individuals, some studies have argued that its results are comparable to sampling conducted face-to-face, by mail or via telephone (Buhrmester et al., 2011). Furthermore, MTurk sampling has been shown to be of comparable or better quality than student and professional panel samples (Kees, Berry, Burton & Sheehan, 2017).

Several steps were taken throughout this study to reduce potential threats to validity. First, before publishing the HIT on MTurk, the system qualification of an approval rating of greater than 99% (percentage of approved HITs) was chosen. Second, to avoid Turkers providing low-quality data, respondents were informed before completing the HIT that each response pattern would be monitored and that any indication of irrelevant and random responses would result in a lack of compensation. Third, all the responses were carefully screened, and invalid responses were rejected. Workers who failed the screening during the first attempt were not offered a second chance. The amount paid to Turkers varies widely from $0.30 (Shim, Vargas & Santos, 2015) to $1.50 (Harrigan, Eves, Miles & Daly, 2017). In this study, each participant was paid US$2.00 upon completion of the survey.

Analysis and Results

Results were presented as means, standard deviations (SDs), skewness and kurtosis. Covariance analysis, reliability analysis, calculation of the average variance extracted (AVE), construct reliabilities and discriminant validity were also used. The authors utilised confirmatory factor analysis (CFA) with the assistance of AMOS 27 to estimate and evaluate the conceptual model. In particular, to estimate model fit, the maximum likelihood with bootstrapping of 2000 samples was applied.

Overall profile of the survey's participants

Out of the 220 responses, this study was conducted using 206 tourists who visited a national park within the three months preceding the data collection period (January–March 2021). In response to the question, 'During the previous three years, how many times have you visited a national park?' answers ranged from 1–26, with many indicating two times (n = 51). Most of the respondents were male, accounting for 54% of the sample. The respondents' ages ranged from 20 to 64 years, with the largest group (41%) being between 30 and 39 years old. The majority were married (n = 137), US American (n = 98) and Indian nationals (n = 71) and represented 12 different nationalities. Almost all visits to different national parks worldwide were domestic (n = 201), with most visits taking place in March 2021 (45%). More than half of the respondents were repeat visitors (146). Many travelled in groups of more than two (n = 152) and with family

members (n = 133). Most participated in self-guided tours (n = 146). The majority reported their overall NBT experience as positive (n = 198).

Table 2 presents the skewness and kurtosis of the data. In fact, Table 2 reveals that variables X16, X18, X19 and X29 showed both skewness and kurtosis, whereas variables X5, X9 and X22 exhibited kurtosis but not skewness. Only four variables had the issue of skewness. Furthermore, we used a t-test to analyse the differences between the first 103 respondents and the last 103 respondents using Armstrong and Overtonne's (1977) method. The findings revealed that there was no non-response bias. Furthermore, we used t-tests to determine the differences in subgroups based on gender, age, nationality and marital status. The results showed that there were no statistically significant differences among the various subgroups. Therefore, there was no such issue of the differences in the responses of the participants with different cultural characteristics among US American and Indian nationals, which could be mainly caused by the skewness of the variables of the dataset. Finally, at the end of the questionnaire, we used two yes/no statements to probe whether the participants were tourists or visited the park near their place of residence. The results indicated that 14 of the 220 responses were from visitors from nearby places of residence, which were eliminated from the sample, and only 206 replies were used in the analysis. The first column of Table 3 specifies all 32 variables of the initial model.

Table 2

Confirmatory factor analysis

The model's fit was tested using CFA. The model's fit to the data was excellent, as the root mean square error of approximation (RMSEA) and confirmatory fit index (CFI) were 0.078 and 0.855, respectively. The RMSEA was below the international threshold of 0.080 (Hair et al., 2014). There were two missing values for variable x28 that were substituted by the mean of the rest of the values, which was 4 (see Notes a at the end of manuscript). The initial non-unidimensional solution of AMOS 27 (see Notes b) found that chi-square = 1014.7, df = 436, CFI = 0.815 and RMSEA = 0.080. A unidimensional solution was achieved during the 14th run of the model, with chi-square = 1089.5, CFI = 0.795 and RMSEA = 0.083. The CFA in the process used the maximum likelihood tool, with a bootstrap of 2,000 times. The modification indices revealed that e31 to e32 = 23.030, e29 to e30 = 11.417, e8 to e9 = 10.949, e13 to e14 = 6.651, e6 to e7 = 5.742, e1 to e2 = 5. 203, e12 to e14 = 4.917 and e12 to e13 = 8.633 (see Notes c).

Given that the 59th case produced Mahalanobis d-squared = 106.625 (Mahalanobis, 1936; see Notes d), we had to eliminate this case, as this value was above 80.000. Furthermore, three variables—x15, x31 and x32—generated standardised regression weights of 0.224, 0.360 and 0.401, respectively, which were below the acceptable value of 0.500. Figure 2 provides the final estimate of the model.

Figure 2

The final run of CFA produced an estimate/solution with chi-square (CMIN) = 788.8, with P = 0.000, CFI = 0.855, RMSEA = 0.078 and Tucker–Lewis index (TLI) = 0.857 (Xia & Yang, 2019). The RMSEA value of 0.078, which is less than 0.08, suggests a reasonable model data fit (Xia & Yang, 2019, p. 409) (see Notes f). Other statistics of interest found during the model fit testing are provided in Table 3.

Table 3

Testing of hypotheses

Based on the covariances found via CFA using AMOS 27, the study results from tests on the hypotheses are provided in Table 4e. Covariances were performed between the independent constructs F1, F2, F3, F4 and F5 and the dependent construct F6 (see Figure 1), between the independent construct F6 and the dependent construct F7 (see Figure 1) and between the independent construct F7 and the dependent construct F8 (see Figure 1).

As Table 4 indicates, all seven hypotheses were supported, and all relationships in the model were positive and significant at the 99% confidence level.

Table 4

Reliability and validity

This study measured reliability using the construct reliabilities calculated in Table 5, as indicated by CFA and the estimation of Cronbach's α for the eight constructs. Table 5 indicates that all constructs had construct reliabilities above 0.7, with an average construct reliability of 0.843. Furthermore, the calculated construct reliabilities via CFA in Table 5 were as follows: novelty = 0.835; experiencescape = 0.834; experience co-creation = 0.830; experience intensification = 0.860; satisfaction = 0.921; memorable NBT experience = 0.853; place attachment = 0.859; and tourists' environmentally responsible behaviour = 0.752. Furthermore, the Cronbach's α measurements for the eight constructs were above the critical value of 0.7. In particular, Cronbach's α was calculated using scale tool reliability analysis conducted through SPSS 27, which yielded the following results: novelty = 0.770; experiencescape = 0.781; experience co-creation = 0.788; experience intensification = 0.812; satisfaction = 0.857; memorable NBT experience = 0.760; place attachment = 0.767; and tourists' environmentally responsible behaviour = 0.716. The average Cronbach's α was 0.781.

The study performed a two-step procedure to evaluate convergent validity. First, all variables' standardised regression weights were above 0.5 (within the range of 0.576–0.874), indicating no convergent validity. Considering that only nine out of 29 values of standardised regression weights were above 0.7, this indicates no evidence of convergent validity. Second, the calculation of the variance extracted from each construct exceeded 50%; consequently, the model indicated somewhat convergent validity. Specifically, the variance extracted for the eight constructs was above 50% (novelty = 0.658; experiencescape = 0.620; experience co-creation = 0.614; experience intensification = 0.827; satisfaction = 0.825; memorable NBT experience = 0.727; place attachment = 0.689; and tourists' environmentally responsible behaviour = 0.620), and the AVE was 0.698. These calculations revealed that each construct had an extracted variance greater than 0.5. Considering that the AVE was 0.698, which was greater than 0.5, Fornell and Larcker's (1981) discriminant validity criterion was satisfied; that is, AVE was greater than 0.5.

Table 5

Discussion and conclusion

The empirical results support all seven hypotheses. First, the standardised path coefficient value between novelty and memorable NBT experiences was 0.285 (P = 0.000), indicating that novelty had a positive and significant impact on memorable NBT experiences. This finding supports H1 and corresponds to studies indicating that novelty is a core input for memories (Wei et al., 2019).

Second, the present study builds on Kim et al.'s (2012) MTE scale by including other factors that impact tourists' memories of NBT experiences. A positive correlation was found between experiencescape and memorable NBT experiences, and the standardised path coefficient value between the two constructs was 0.375 (P = 0.000). This corresponds to findings from studies indicating that a favourable perception of an environment creates feelings of enjoyment and favourable subjective memories (Dong & Siu, 2013; Sthapit, 2017). Thus, the results highlight the environment's significance in NBT.

Third, the standardised path coefficient value between experience co-creation and memorable NBT experiences was 0.289 (P = 0.000), indicating that experience co-creation had a direct positive and significant impact on memorable NBT experiences. During the experience co-creation process, tourists can become involved either passively or actively; thus, those who actively co-create their NBT experiences by interacting with guides, service staff and other customers might have a more memorable experience. In other words, tourists who are more inclined towards active participation and who are engaged in the experience might tend to have

a more memorable NBT experience. This result corresponds with some prior research indicating that experience co-creation is a significant predictor of experience retention (Sthapit et al., 2018).

Fourth, the association between experience intensification and tourists' memorable NBT experiences was significant and positive (H4), with a standardised path coefficient value of 0.422 (P = 0.000). The findings suggest that tourists who take pictures during NBT experience intensify their experiences by doing so, allowing them to have a more memorable experience. In other words, the more intense the NBT experience, the more memorable it is likely to be. In fact, such acts of intensification might serve as the basis for remembered experiences. These findings correspond to those of some prior studies indicating that photos can elicit memories of trip experiences (Sthapit, 2017; Sthapit et al., 2019).

Fifth, the path from satisfaction to constructing memorable NBT experiences was positive, indicating that satisfaction had a direct and significant impact on a trip experience's memorability. Therefore, this finding supports H5 and supports Tung and Ritchie (2011), who found a positive relationship between satisfaction and memorable experiences. Although Kim's (2009) study indicated that satisfactory tourism experiences may not be recalled during the post-consumption phase, the present study's results indicate that the higher the level of tourist satisfaction from an NBT experience, the higher the experience's memorability. Contrary to studies indicating that memorable experiences hold higher value for tourists than merely satisfactory ones (Kim et al., 2012), this study's findings support extant research indicating that satisfaction is one of the key constructs in tourist behaviour studies (Lee, Kyle & Scott, 2012).

Sixth, the relationship between memorable NBT experiences and place attachment was significant, thus supporting Hypothesis 6. Thus, when tourists have a memorable NBT experience, they are more likely to evaluate the destination as a place that meets their functional needs. That is, experiencing NBT enables tourists to create unforgettable memories, and such memories further enhance their identification with or strong attachment to a destination. This study further indicated that the degree to which a tourist becomes attached to a destination depends on how memorable the tourist experience is (Sthapit et al., 2017).

Seventh, the standardised path coefficient value between place attachment and TERB (0.226; P = 0.000) indicated that place attachment exerts a significant direct effect on TERB, which confirms H7 and corresponds to studies that indicated that when tourists are highly attached to attractions, they are more likely to practise TERB (Cheng & Wu, 2015). This finding also corresponds to conclusions from previous studies on tourists visiting national parks (Halpenny, 2010); that is, tourists with high attachment to the destination will ensure that they do not damage it and even convince others to adopt behaviours that benefit the local environment. Thus, this finding reflects how place attachment is an antecedent to TERB. As place attachment increases, the likelihood of environmentally responsible behaviour among visitors also increases.

The theoretical contribution of this study includes the extension of the MTE scale in the context of NBT. More specifically, the findings identify other constructs that have an impact on MTE—in this context, memorable NBT experience (experiencescape, experience co-creation, experience intensification and satisfaction). The findings indicate that the higher the level of perceived novelty, experiencescape, experience co-creation, experience intensification and satisfaction, the stronger the experience's memorability, supporting H1–H5. This finding supports existing studies indicating that tourists' memorable experience—in this case, NBT—is a multifaceted concept (Sthapit & Jiménez-Barreto, 2018) and is not one-dimensional. Overall, this study builds on existing studies on MTE and sustainable tourism research by furthering the understanding of the antecedents to memorable NBT experiences and the mediating effects of memorable NBT experiences on place attachment, including place attachment's impact on TERB.

This study provides interesting managerial implications for destination management organisations (DMOs) of nature-based destinations, national parks and NBT attraction managers

to increase the memorability of visitors' experiences. First, DMOs of nature-based destinations, national parks and NBT attraction managers should offer new and diverse experiences for visitors. Second, visitors to nature-based destinations and national parks should not be viewed as passive agents but rather as active producers of their own consumption experiences. Service providers, for example, guides at national parks and NBT attractions, actively interact with visitors who want to co-create their experiences. Such on-site participatory experiences involving social interaction and focused mental engagement will help capture and maintain visitors' interests and attention, which might help visitors make optimum use of their time while visiting these destinations. During on-site experience co-creation, visitors to national parks should be the focus of attention, while interactions should be used to help visitors acquire memorable experiences. This study calls for a shift in service providers—from national park managers and guides to memorable experience co-creators.

However, this study has some limitations. The number of participants was limited, and the study used convenience sampling; thus, the results' generalisability is limited. Furthermore, the study participants were primarily US Americans and Indians, so future studies would benefit from more multicultural sample bases. The data were collected during the post-visit stage and therefore relied on variable periods of memory. To avoid this incongruence between remembered and on-site experiences, future studies should involve interviews with tourists immediately after their visits. The present study adopted a web-based survey questionnaire. Adopting a greater array of research methods might overcome this limitation. Moreover, although English can be viewed as the most dominant international language, the fact that the survey was written only in English could have excluded non-English speakers from participating in the study. In the future, presenting the survey using different language options might be beneficial. Another limitation is that the data were not collected from a specific area and did not consider that tourists' perceptions may also be bound to their cultural backgrounds. The notion of experiences may mean different things to different people, and consumers may differ in terms of background or nationality (Uysal, Perdue & Sirgy, 2012). Future studies should empirically test the moderating effect of gender in the link between novelty, experiencescape, experience co-creation, experience intensification and satisfaction on memorable NBT experiences. Lastly, future studies could extend and augment the findings of this current study by including other dimensions that might have an impact on memorable NBT experiences, for example, quality of service (Fu, Lin, Wang & Sun, 2020) and nature affiliation (Kim et al., 2018). Given that memories of holidays have been shown to contribute to individuals' subjective well-being (Sthapit & Coudounaris, 2018), future studies could examine whether memorable NBT experiences contribute to subjective well-being.

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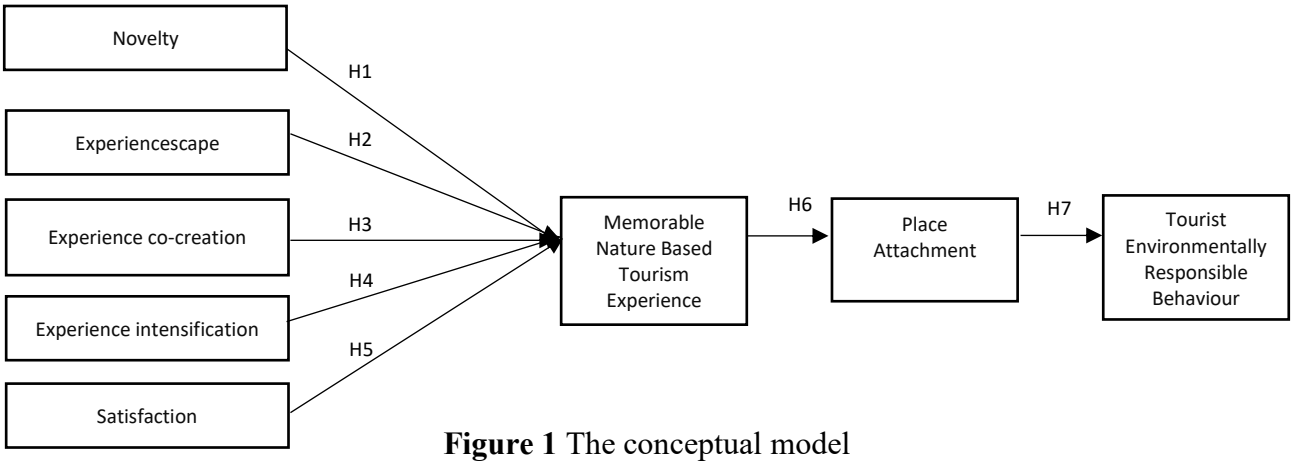

Figure 1 The conceptual model

Alt Text for Figure 1: The conceptual model used in the study comprising of eight different constructs: novelty, experiencescape, experience co-creation, experience intensification, satisfaction, memorable nature based tourism experience, place attachment and tourist environmentally responsible behaviour.

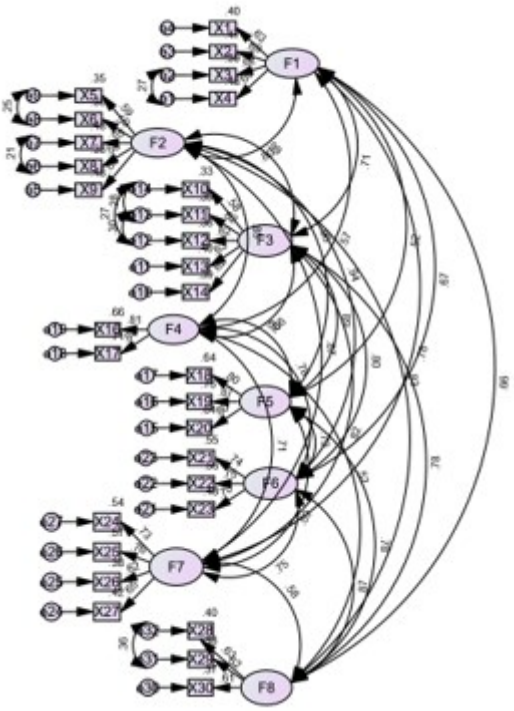

Figure 2 The final estimation of the model*

Note*: F1: Novelty, F2: Experiencescape, F3: Experience co-creation, F4: Experience intensification, F5: Satisfaction, F6: Memorable natured based tourism experience, F7: Place Attachment, and F8: Tourist Environmentally Responsible Behaviour

Alt Text for Figure 2: The final estimation of the model comprising of eight different constructs: novelty, experiencescape, experience co-creation, experience intensification, satisfaction, memorable nature based tourism experience, place attachment and tourist environmentally responsible behaviour.

Table 1 Operationalisation of the constructs used in this study (variables sources and measurement items)

Novelty (Sthapit, Del Chiappa, Coudounaris & Björk, 2019)
X1 I had once-in-a-lifetime nature based tourism experience
X2 I had a unique nature based tourism experience
X3 My recent nature based tourism experience was different from previous stays
X4 I experienced something new during my recent stay nature based tourism

Experiencescape (Pizam & Tasci, 2019)
X5 The atmosphere was appealing to my senses
X6 The level of crowd was comfortable
X7 The employees were at the site were friendly
X8 The customers were sociable
X9 The environment reflects nature

Experience co-creation (Mathis, Kim, Uysal, Sirgy & Prebensen, 2016)
X10 Working alongside guides, service staff and other tourists allowed me to have a great social interaction during my recent nature based tourism experience, which I enjoyed
X11 I felt comfortable working with guides, service staff and other tourists during my recent nature based tourism experience
X12 The setting allowed me to effectively collaborate with guides, service staff and other tourists during my recent nature based tourism experience
X13 My recent nature based tourism experience was enhanced because of my participation in the experience
X14 I felt confident in my ability to collaborate with guides, service staff and other tourists during my recent nature based tourism experience

Experience intensification (Dong & Siu, 2013)
X15 I purchased souvenirs during my recent nature based trip
X16 I took memorable pictures during my recent nature based trip
X17 Pictures helped me keep my recent nature based tourism experience

Satisfaction (Oh et al. (2007; Quadri-Felitti & Fiore, 2013)
The recent nature-based tourism experience made me feel:
X18 Very Satisfied
X19Very Pleased
X20 Delighted

Memorable natured based tourism experience (Oh, Fiore & Jeoung, 2007)
X21 I have wonderful memories of my recent nature based tourism experience
X22 I will not forget my recent nature based tourism experience
X23 I will remember my recent nature based tourism experience

Place Attachment (Williams & Vaske, 2003)
X24 I feel that this place is a part of me
X25 This place is the best place for what I like to do
X26 This place is very special to me
X27 No other place can compare to this place

Tourist Environmentally Responsible Behaviour (TERB) (Cheng, Wu & Hunag, 2013; Chiu, Lee & Chen, 2014; Su & Swanson, 2017)
X28 I complied with the regulations to not destroy the visited nature site's environment
X29 I tried not to disrupt the fauna and flora during my recent nature based trip
X30 When I produce garbage during my nature based trip, I put it in the trash bin
X31 If there were environment improvement activities in the visited destination, I was willing to attend
X32 I try to convince others to protect the destination's natural environment

Table 2 Descriptive statistics: Mean, Standard Deviation, Skewness, and Kurtosis

Variables	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
X1= Novelty1: I had once-in-a-lifetime nature-based tourism experience	3.7670	1.04255	-.590	.169	-.296	.337
X2= Novelty2: I had a unique nature-based tourism experience	3.9660	.95958	-.935	.169	.776	.337
X3= Novelty3: My recent nature-based tourism experience was different from previous stays	3.9320	.90270	-.629	.169	.086	.337
X4= Novelty4: I experienced something new during my recent stay nature-based tourism	4.0097	.93699	-.882	.169	.511	.337
X5= Experiencescape1: The atmosphere was appealing to my senses	4.2379	.84202	-.818	.169	1.051	.337
X6= Experiencescape2: The level of crowd was comfortable	4.0097	.93699	-.774	.169	.272	.337
X7= Experiencescape3: The employees were at the site were friendly	4.0000	.92129	-.718	.169	-.074	.337
X8= Experiencescape4: The customers were sociable	3.8592	.97510	-.734	.169	.300	.337
X9= Experiencescape5: The environment reflects nature	4.1845	.88618	-.920	.169	1.527	.337
X10= Experience co-creation1: Working alongside guides, service staff and other tourists allowed me to have a great social interaction during my recent nature-based tourism experience, which I enjoyed	3.8010	.93402	-.463	.169	-.278	.337
X11= Experience co-creation2: I felt comfortable working with guides, service staff and other tourists during my recent nature-based tourism experience	3.9466	.86789	-.529	.169	-.129	.337
X12= Experience co-creation3: The setting allowed me to effectively collaborate with guides, service staff and other tourists during my recent nature-based tourism experience	3.8495	.87884	-.354	.169	-.384	.337
X13= Experience co-creation4: My recent nature-based tourism experience was enhanced because of my participation in the experience	4.0000	.90527	-.558	.169	-.531	.337
X14= Experience co-creation5: I felt confident in my ability to collaborate with guides, service staff and other tourists during my recent nature-based tourism experience	3.9029	.83829	-.517	.169	.066	.337

X15= Experience intensification1: I purchased souvenirs during my recent nature-based trip	3.1553	1.42970	-.297	.169	-.907	.337
X16= Experience intensification2: I took memorable pictures during my recent nature-based trip	4.2136	.98921	-1.117	.169	1.485	.337
X17= Experience intensification3: Pictures helped me keep my recent nature-based tourism experience	4.1359	.96826	-.855	.169	.852	.337
X18= Satisfaction1: The recent nature-based tourism experience made me feel very satisfied	4.3689	.84957	-1.163	.169	1.825	.337
X19= Satisfaction2: The recent nature-based tourism experience made me feel very pleased	4.3350	.88865	-1.086	.169	1.117	.337
X20= Satisfaction3: The recent nature-based tourism experience made me feel delighted	4.2233	.94670	-.962	.169	.912	.337
X21= Memorable NBT Experience1: I have wonderful memories of my recent nature-based tourism experience	4.1942	.95313	-.883	.169	.979	.337
X22= Memorable NBT Experience2: I will not forget my recent nature-based tourism experience	4.2427	.86635	-.965	.169	1.551	.337
X23= Memorable NBT Experience3: I will remember my recent nature-based tourism experience	4.1262	.90720	-.926	.169	.505	.337
X24= Place Attachment1: I feel that this place is a part of me	4.0000	.94223	-.813	.169	.180	.337
X25= Place Attachment2: This place is the best place for what I like to do	4.0485	.93578	-.963	.169	.680	.337
X26= Place Attachment3: This place is very special to me	3.8689	1.12067	-.957	.169	.303	.337
X27= Place Attachment4: No other place can compare to this place	4.0388	.97703	-.807	.169	.075	.337
X28= TERB1: I complied with the regulations to not destroy the visited nature site's environment	4.2157	.94819	-.950	.170	.882	.339
X29= TERB2: I tried not to disrupt the fauna and flora during my recent nature-based trip	4.3058	.90993	-1.247	.169	2.352	.337
X30= TERB3: When I produce garbage during my nature-based trip, I put it in the trash bin	4.0922	.96588	-.941	.169	.388	.337
X31= TERB4: If there were environment improvement activities in the visited destination, I was willing to attend	3.8592	1.04279	-.627	.169	-.244	.337
X32= TERB5: I try to convince others to protect the destination's natural environment	4.0097	.95759	-.895	.169	.409	.337

Table 3 Statistics related to the fit of the model*

Model Fit Parameters	Estimates of Parameters of Default Model					
CMIN	NPAR	CMIN	DF	P	CMIN/DF	
	110	788.839	354	.000	2.228	
Baseline Comparisons	NFI, Delta1	RFI, rho1	IFI, Delta2	TLI, rho2	CFI	
	.769	.735	.858	.834	.855	
Parsimony-Adjusted Measures	PRATIO	PNFI	PCFI			
	. .872	.670	.746			
NCP	NCP	LO90	HI90			
	434.839	357.296	520.108			
FMIN	FMIN	FO	LO90	HI90		
	3.867	2.132	1.751	2.550		
RMSEA	RMSEA	LO 90	HI 90	PCLOSE		
	.078	.070	.085	.000		
AIC	AIC	BCC				
	1008.839	1046.771				
ECVI	ECVI	LO 90	HI 90	MECVI		
	4.945	4.565	5.363	5.131		
	HOELTER, .05	HOELTER, .01				
HOELTER	104	109				

*Note: The estimates of parameters is based on N=205 and the study correlates the errors of the variables that had high covariance.

Table 4 Test of hypotheses using CFA (Covariances) via AMOS 27

Hypo-theses	Relationship*	Estimate		C.R. (t)	Sig. (p-value)	Status of hypotheses
		Beta	Std. Error			
H1	F1: Novelty to F6	.285	.050	5.661	.000	Supported
H2	F2: Experiencescape to F6	.375	.049	7.653	.000	Supported
H3	F3: Experience co-creation to F6	.289	.041	6.975	.000	Supported
H4	F4: Experience intensification to F6	.422	.059	7.115	.000	Supported
H5	F5: Satisfaction to F6	.404	.056	7.265	.000	Supported
H6	F6: Memorable natured based tourism experience to F7	.340	.049	6.953	.000	Supported
H7	F7: Place Attachment to F8	.226	.043	5.300	.000	Supported
*F8: Tourist Environmentally Responsible Behaviour						

Table 5 Completely standardized factor loadings, variance extracted and estimates of construct reliability (N=205)*

Variables	**Item Reliability**									**Eigen-values**	**δ =1-item reliability**
	N	**E**	**EC**	**EI**	**S**	**MNBTE**	**PA**	**TERB**			
X1	.631								.631		.369
X2	.686								.686		.314
X3	.623								.623		.377
X4	.693								.693	2.633	.307
X5		.588							.588		.412
X6		.590							.590		.410
X7		.653							.653		.347
X8		.577							.577		.423
X9		.690							.690	3.098	.310
X10			.576						.576		.424
X11			.621						.621		.379
X12			.617						.617		.383

X13			.634						.634		.366
X14			.622						.622	3.070	.378
X16				.812					.812		.188
X17				.842					.842	1.654	.158
X18					.803				.803		.197
X19					.874				874		.126
X20					.799				799	2.476	.201
X21						.740			.740		.260
X22						.745			.745		.255
X23						.695			.695	2.180	.305
X24							.733		.733		.267
X25							.756		.756		.244
X26							.620		.620		.380
X27							.646		.646	2.755	.354
X28								.634	.634		.366
X29								.617	.617		.383
X30								.610	610	1.861	.390
Variance Extracted %	65.83	61.96	61.40	82.70	82.53	72.67	68.88	62.03	**AVE**= 69.75		
Construct Reliability	.835	.834	.830	.860	.921	.853	.859	.752	**ACR=** .843		

*Note: The following formulae are used for calculating VE and CR of constructs:
VE= Σ of standardized regression weights / n,
CR= (Σ of standardized regression weights)² / [(Σ of standardized regression weights)² + (Σδ)],
AVE = average variance extracted, ACR = average construct reliability
Constructs: N = Novelty, E = Experiencescape, EC = Experience Co-creation, EI = Experience intensification, S = Satisfaction, MNBTE = Memorable Natured Based Tourism Experience, PA = Place Attachment, MAE = Tourist Environmentally Responsible Behaviour.

Notes

(a) There were only 2 missing values of x28 out of 205 values. To run AMOS, there should be no missing values of the variables used. Therefore, when you have few missing values (for example less than 5 missing values) one can use the mean of the remaining values (in this case 203 existing values) as good estimates for the missing values.

(b) AMOS 27 is a software used for the Structural Equation Modeling (SEM) analysis. 27 indicates the version of AMOS. Statistical Package for the Social Sciences (SPSS) which is another software for estimating different tools i.e., descriptive statistics, regression analysis, exploratory factor analysis, cluster analysis etc.

(c) e31, e32, e29, e30, e1, e2, e6, e7,e8, e9, e12, e13, e14, e31, e32, e29, and e30 represent the error of each variable.

(d) Mahalanobis d-squared analysis and their values are internally calculated by the AMOS software. One should know to use AMOS to understand the various tools of this software. Identifying multivariate outliers with Mahalanobis Distance can be found by using AMOS. There is alternative software to AMOS for testing the fit of a model such as EQS, Lisrel, and MPlus. The readers should know at least one method to apply for SEM analysis.

(e) F1, F2, F3, F4, F5, F6, F7 and F8 have respectively following names of constructs i.e., Novelty, Experiencescape, Experience Co-creation, Experience intensification, Satisfaction, Memorable Natured-Based Tourism Experience, Place Attachment, and Tourist Environmentally Responsible Behaviour.

(f) According to Xia and Yang (2019, p.409) "RMSEA is an absolute fit index, which assesses how far a hypothesized model is from a perfect model and CFI and TLI are incremental fit

indices which compare the fit of a hypothesized model with that of a model with the worst fit". All three statistics are heavily used by researchers with a set of cut-off criteria. When RMSEA is less than 0.08 suggests a reasonable model-data fit (Xia and Yang, 2019, p.409).