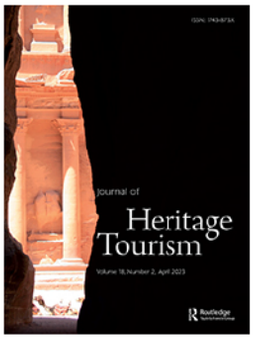

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A cognitive appraisal perspective of emotional accessibility at heritage sites: empirical evidence from the UNESCO World Heritage Site of Petra

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ABSTRACT

The emotional aspects of heritage experiences remain so far under-researched with the emotional accessibility at such sites ignored. Using cognitive appraisal theory (CAT) and reversal theory, this study evaluates the role of motivation, tourism impacts, emotional accessibility, and felt emotions in determining tourist satisfaction at heritage sites. Based on a sample of 1531 international visitors to Petra, this study confirms that tourist motivation affects perceived positive but not negative tourism impacts. Tourist motivation contributes positively toward visitors accessing their emotions (emotional accessibility) derived from the site visit. However, only positive tourism impacts contribute to emotional accessibility, and the latter informs both felt positive and negative emotions. Significant relationships exist between these factors and tourist satisfaction. Implications for cultural sustainability and tourist experience management at heritage sites are suggested.

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Emotional accessibility; emotions; cultural sustainability; tourist motivation; tourism impacts; tourist satisfaction; cognitive appraisal theory

Introduction

A growing scholarly engagement in tourism research has applied cognitive appraisal theory (CAT) to explain how tourists and the environment interact to generate positive and negative emotions from tourism experiences and the subsequent behavioral outcomes (Hosany et al., 2021; Ma et al., 2013). Cognitive appraisals elicit emotions (Lazarus, 1991) but tourism research has employed CAT primarily to understand how cognitive evaluations affect emotions (Jordan et al., 2019; Zheng et al., 2021). For instance, Jiang (2020) draws on CAT to examine experience authenticity and employee helpfulness as predictors of tourist delight, which in turn, positively affects intention to engage in positive word-of-mouth. In the context of heritage tourism, CAT has been employed to understand how unfavorable experiences of tourists at destinations such as harassment can impact their cognitive assessment and emotional responses (Otoo et al., 2019). More recently, Prayag et al. (2021) apply CAT to segment visitors to Petra in an attempt to understand the relationship between tourist motivation and emotions. Despite these valuable contributions, existing heritage tourism research applying CAT seems to have overlooked perceived tourism impacts and emotional accessibility as antecedents of the positive and negative emotions felt by tourists. Nonetheless, in dark tourism studies (e.g. Prayag et al., 2018) motivation and perceived tourism impacts have been shown to influence tourist satisfaction, suggesting that cognition and behavioral

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outcomes are linked. Yet, such studies fail to consider emotions as an intervening variable that affects tourist response and behaviors.

Likewise, emotional accessibility as a concept has received scant attention in heritage tourism experiences. Emotional accessibility refers to 'the ease with which one's emotional state is available and open for interpretation' of experiences (Wang et al., 2021, p. 1089). In tourists' recall of their emotions, some are more accessible in memory than others. Thus evaluations of emotions retrospectively require that tourists are capable of recalling the range of emotions that they felt from an experience, an issue sparsely researched in the tourism literature, but also how their motivation drives accessibility of emotions. Reversal theory (Apter, 1982) provides the foundation for understanding the relationship between motivation, emotional accessibility and felt emotions. Thus, informed by CAT (Lazarus, 1991), reversal theory (Apter, 1982), Prayag et al. (2018) study on motivation and tourism impacts, as well as Wang et al. (2021) emotional accessibility concept, we propose that motivation and perceived positive (negative) tourism impacts are cognitive evaluations by tourists that elicit affective responses. However, affective responses depend on how accessible positive and negative emotions are in memory in relation to visitation motives. We argue that cognitive and affective (positive and negative emotions) evaluations also depend on emotional accessibility to affect tourists' post-consumption behavior (tourist satisfaction) as shown in Figure 1.

The knowledge gaps these study addresses are four-fold. First, several studies in heritage tourism highlight the role of positive and negative emotions in determining post-consumption behaviors (Chi & Chi, 2020; Domínguez-Quintero et al., 2019; Su & Hsu, 2013), yet the accessibility of these emotions in the individual cognitive schema has not been evaluated. Hence, extending previous studies (Dominguez-Quintero et al., 2019; Prayag et al., 2018; Prayag et al., 2021), we demonstrate the importance of emotional accessibility as an affective variable in behavioral models on heritage tourism. Second, despite heritage tourism motivation being a well-researched area (Carreira et al., 2021; Poria et al., 2006), few studies (e.g. Prayag et al., 2018) examine the relationship between heritage tourism motives and perceived tourism impacts. This omission is significant given that motivation can be a critical factor shaping how tourists perceive tourism impacts (Alazaizeh et al., 2016b; Prayag et al., 2018; Zhao & Timothy, 2017). Third, an emerging research strand examines how tourism impacts elicit emotions (Jordan et al., 2019), employing CAT (Jordan & Prayag, 2021; Zheng et al., 2021). However, these studies focus on understanding residents rather than tourist perceptions of tourism impacts and emotion accessibility is not considered an intervening

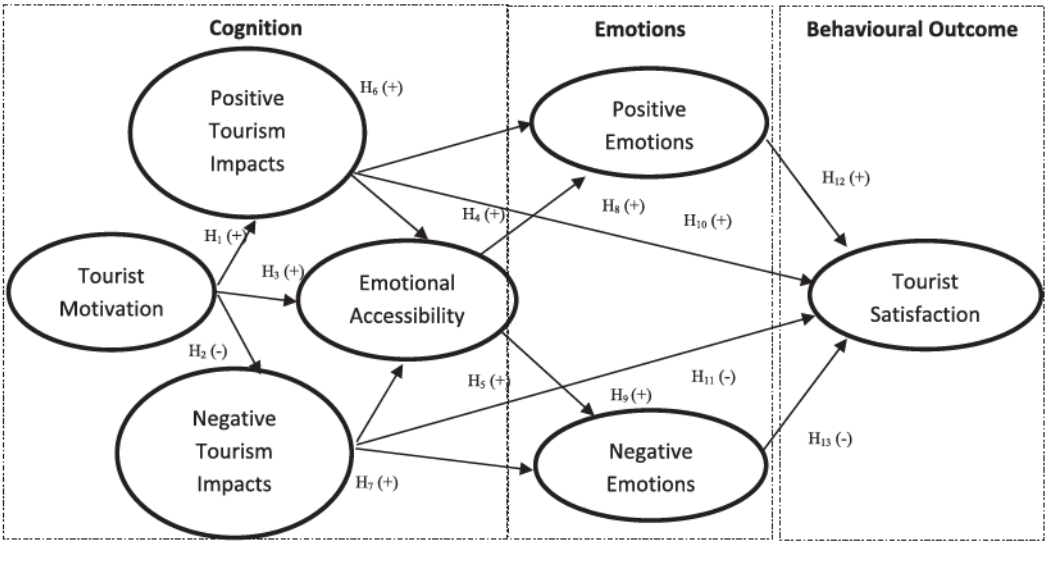

Figure 1. Proposed model and hypothesized relationships.

variable. This latter issue is of particular importance given that existing tourism research tends to be biased toward experience memorability (Kim, 2010; Kim, 2014) overlooking how easily and readily tourists can recall and relive felt emotions in destinations and the antecedents and outcomes of that (Lee & Lee, 2021; Wang et al., 2021).

In addition, the relationship between motivation and tourists' emotional responses has received some attention (Cheng et al., 2020; Güzel et al., 2020; Yan et al., 2016), with heritage motivation in particular affecting the emotional experience on site (Poria et al., 2004). Yet, these studies evaluate this relationship either in a context other than heritage tourism (Cheng et al., 2020; Güzel et al., 2020) or evaluate only negative emotional responses (Yan et al., 2016). None of these studies examine the relationship between tourism impacts and emotional accessibility. Collectively, the cognitive and affective factors evaluated in this study provide a better understanding of heritage tourism experiences at UNESCO World Heritage Sites and can improve the explanatory power of behavioral models. Thus the main objective of this study is to evaluate a theoretical model based on CAT (see Figure 1) that postulates relationships between motivation, tourism impacts (positive and negative), emotions (positive and negative), emotional accessibility, and tourist satisfaction. Next, the main concepts of the study are reviewed followed by the method, findings, and implications of the findings.

Literature review

Tourist motivation for heritage sites

Dann (1981) defined travel motivation as a meaningful state of mind that disposes individuals to travel. In the context of heritage tourism, a coherent body of research reveals that tourists are generally heterogeneous in their travel motivations (López-Guzmán et al., 2019; Poria et al., 2006). One of the most popular theorizations of travel motivation pertains to the push and pull theory (Gnoth, 1997). This theory is based on the assumption that people are pulled by extrinsic forces (e.g. attractiveness of the site) and pushed by intrinsic forces (e.g. desire for learning about the site). Several studies in heritage tourism identify that site-related attributes play an important role in motivating travelers (Ramires et al., 2018). This is particularly relevant to UNESCO World Heritage Sites whereby travelers may perceive the site as a 'must visit' attraction (Poria et al., 2006) that is of major significance to humankind heritage (Poria et al., 2013). Desire for learning about the site has also been identified as a key driver of visitation by heritage tourists (Carreira et al., 2021; Nguyen & Cheung, 2016; Poria et al., 2006; Prayag et al., 2018). Nguyen and Cheung (2016) define heritage motivation as a knowledge-pursuit motive. Yet, the way heritage is perceived and evaluated may vary based on individuals' cultural backgrounds (Poria et al., 2011). In this vein, a considerable body of research also highlights the role of identity and tourists' interpretation of heritage as part of their own in governing travel decisions and shaping visitation motives (Poria et al., 2004; Poria et al., 2006; Prayag et al., 2018). For instance, Poria et al. (2006) and Poria et al. (2011) emphasize the emotional link between the tourist and the site visited and suggest that the more tourists perceive the site as part of their heritage, the more motivated they are to visit the site. In the context of the current investigation focused on Petra, Alazaizeh et al. (2016a) used McKercher's (2002) model to identify the types of heritage tourists at Petra. Their findings indicate that most tourists were sightseeing heritage tourists who, although heritage plays an important role in their trip motivation, had a shallow heritage experience. The purposeful heritage tourists who are mainly motivated by the desire for learning and who had a deep heritage experience, however, constituted a considerable portion of all visitors.

Tourism impacts at heritage sites

As cognitive responses to environmental stimuli, tourism impacts have attracted significant academic attention. A major stream of research examines perceived tourism impacts as a crucial

issue within the sustainability discourse and the discussion around support for tourism development (Chi et al., 2017; Nunkoo & Ramkissoon, 2011a, 2011b). Previous research shows how tourism may bring about positive outcomes including economic benefits for locals and preservation of history and cultural identity (Ap & Crompton, 1993; Wang & Pfister, 2008). However, a considerable body of research also emphasizes the potential negative impacts of tourism development on heritage sites including destruction of archeological materials, pressure on a site's resources, and increased prices (Alazaizeh et al., 2016a; Comer, 2012). For instance, while the UNESCO designation represents a 'global recommendation to visit and cherish the site' (Poria et al., 2013, p. 273), this recognition may result in tourism demand that exceeds existing resources, putting at risk the sustainability of the heritage site itself (Caust & Vecco, 2017). The desire of generating greater revenues from the tourism site without comprising its cultural attributes and heritage values has been at the core of scholarly engagement on sustainability and tourism impacts (Caust & Vecco, 2017). Yet, as noted by some researchers (e.g. Prayag et al., 2018), research into perceived tourism impacts is largely biased toward residents' rather than tourists' perspectives. In the specific case of Petra, some research endeavors highlight both the positive and negative impacts of tourism (Dinçer et al., 2016). For instance, Comer (2012) acknowledges the favorable impacts of tourism on the local economy but also highlights its destructive impact on archaeological attributes of the site.

Emotional accessibility and emotions

As affective responses to cognitive stimuli, emotions have recently received considerable attention in tourism research in general and heritage tourism in particular (Prayag et al., 2021; Prayag et al., 2022). Defined as a complex state of feeling in response to external or internal events of major significance (Wang et al., 2021), emotions are argued to act as key predictors of tourists' perceptions and behaviors (Al-Msallam, 2020; Lengieza et al., 2021; Prayag et al., 2013). Previous research highlights the (un)favorable impacts of positive (negative) emotions on tourists' post-consumption evaluations (del Bosque & San Martín, 2008; Prayag et al., 2013; Su & Hsu, 2013). However, due to the complexity of emotions (Knobloch et al., 2017), existing theoretical assessments do not seem to agree on definitive conclusions. To illustrate, several studies challenge the notion of pleasure-seeking in leisure activities and suggest that even negative emotions may result in positive outcomes (Knobloch et al., 2017). For instance, emotions such as sadness and fear in contexts such as dark tourism and adventure tourism may be crucial to enhance the tourist experience (Carnicelli-Filho et al., 2010; Nawijn & Fricke, 2015; Yan et al., 2016). This shows the importance of context in the study of emotions. Past studies have typically focused on emotions in the context of dark heritage rather than the emotions at other types of heritage sites (Nawijn et al., 2018; Nawijn & Fricke, 2015; Oren et al., 2021). Closely linked to the discourse on emotions, some research delve into how easily and readily tourists can recall and relive felt emotions in a given site or destination (Wang et al., 2021). This is referred to as emotional accessibility, an established construct in cognitive psychology scholarship (Rubin et al., 2003; Sheen et al., 2001) and an emerging concept in tourism research (Wang et al., 2021). Emotional accessibility is closely associated with autobiographical memory that consists of recollection and vividness (Holland & Kensinger, 2010) and is also addressed as an underlying mechanism explaining the effects of emotions on other variables (Wang et al., 2021). Although emotional accessibility is associated with memory, it is different from memorability or experience memorability in that emotional accessibility refers to the extent to which individuals can easily and readily recall and relive felt emotions (Wang et al., 2021) whereas memorability refers to the behavioral outcome of memory involving a wide range of things (e.g. images, events) that can be recalled (Bainbridge, 2019). In tourism research, memorability is also assessed as the tourist's evaluation of the recalled experience (Campos et al., 2017). However, previous studies assume that visitors can recall emotions vividly (e.g. Kim, 2010, 2014). This assumption is based on the notion that people are more likely to recall emotional events than more neutral events (Reisberg & Heuer, 2004). Yet, the interrelationship between emotional

accessibility on the one hand, and emotions, travel motives, and perceptions of tourism impacts on the other hand remains unexplored.

Tourist satisfaction at heritage sites

Tourist satisfaction has been one of the most investigated constructs in tourism research. An extensive number of studies employ tourist satisfaction either as an antecedent of other variables such as loyalty (e.g. Cakici et al., 2019) or as an outcome for other variables such as service quality and tourism experience (e.g. Cetin, 2020; Lee et al., 2021). Others model tourist satisfaction both as antecedent and outcome (Alrawadieh et al., 2019a; Chen & Chen, 2010). Despite the ubiquity of research into tourist satisfaction, notably, few studies examine emotions and perceived tourism impacts as antecedents of tourist satisfaction. In line with previous studies drawing on the CAB framework (e.g. Prayag et al., 2018), the present study views tourists' satisfaction as a post-consumption behavior following a cognitive and effective evaluation of a tourist experience (del Bosque & San Martín, 2009), supporting the outcome view of satisfaction.

Hypothesis development

Despite the importance of motivation studies in understanding the nature and impacts of visitation to heritage sites, little is known about the relationship between motivation and perceived tourism impacts (Prayag et al., 2018). Both motivation and perceived tourism impacts are cognitive constructs (Prayag et al., 2018) and according to Lazarus (1991), there are significant conceptual overlaps between cognition and motivation. Without cognition, it is difficult for humans to comprehend and adapt to their environment and choose appropriate courses of action (Lazarus, 1991). This implies that in a heritage setting, cognition and, hence, motivation imbues the ability for the tourist to evaluate tourism impacts. Previous studies suggest that heritage tourists' motivations are positively associated with how they view tourism impacts that are positive (Zhao & Timothy, 2017; Prayag et al., 2018). For instance, Prayag et al. (2018) noted that the more motivated domestic tourists were to visit a dark heritage site, the more positive tourism impacts they perceived. In their study on heritage tourists at Petra, Alazaizeh et al. (2016b) noted that purposeful and sightseeing heritage tourists are likely to place more importance on preservation values as a key positive outcome of tourism development. Therefore, there is empirical evidence to support that motives associated with the physical and cultural attributes of the site, the desire for learning about the heritage of the site, and the desire to feel emotionally connected to it are all associated with a greater appreciation of the tourism impacts (e.g. Prayag et al., 2018). Thus, the following hypothesis is formulated:

H1: Tourist motivation is positively related to perceived positive tourism impacts.

Likewise, CAT suggests that without a stake in the outcome of a transaction, one can neither understand the motivation or emotion driving an individual (Lazarus, 1991). This implies that in any behavioral model of heritage tourists, post-consumption behaviors must be evaluated in relation to cognition and motives driving the behavior. As such, perceptions of negative tourism impacts would contradict tourists' visitation motives such as a site being listed as World Heritage, the physical and cultural attributes of the site being maintained and preserved for future generation and the site providing opportunities to increase knowledge on its value to humanity. It is therefore not surprising that previous studies (e.g. Prayag et al., 2018) suggest that a negative relationship can exist between tourist motivation and perceptions of negative tourism impacts. Yet, heritage tourists may also offset their perceptions of the adverse impacts of tourism on the heritage site against the benefits derived from the experience as has been shown in tourism development studies (Chi et al., 2017; Ko & Stewart, 2002; Prayag et al., 2018). Thus they may downplay the importance of the negative impacts in relation to their visitation motives. Nonetheless, we suggest:

H2: Tourist motivation is negatively related to perceived negative tourism impacts.

The central tenet of CAT is that appraisals (cognition) are both necessary and sufficient to elicit emotions (Lazarus, 1991). This implies that the significance of the motives would affect the intensity of the emotions elicited. It is therefore not surprising that several studies suggest that motivations can have a positive influence on emotions (Prayag et al., 2022; Tamir et al., 2013). However, reversal theory (Apter, 1982) suggests that individuals' motivational states can determine the way that they interpret emotions and that these emotions may change or reverse based on individuals' motivational styles and the meaning they ascribe to a given situation (Mackenzie & Kerr, 2013). This implies that CAT assumes that individuals are capable of recalling and accessing emotions in memory easily, while reversal theory pinpoints to emotions not always being accessible. Yet, Kennedy et al. (2004) show how some individuals may be motivated to recall past events in emotionally satisfying ways. Given that travel motives may contain powerful emotional significance for individuals (Holland & Kensinger, 2010), we suggest that heritage tourists' motivations can influence the accessibility of emotions by affecting the recall and vividness of felt emotions at the site. As such we suggest:

H3: Tourist motivation has a positive impact on emotional accessibility.

According to CAT (Lazarus, 1991), emotions are evoked as a result of cognitive evaluations. In tourism research, a growing research strand delves into the intersection between individuals' evaluations of tourism impacts and their affective responses (Jordan et al., 2019; Zheng et al., 2021). Although this research strand focuses on host communities overlooking tourists, a recent study alludes to a relationship between perceptions of tourism impacts and emotions (Prayag et al., 2018) but not emotional accessibility. According to reversal theory, the same situation can be experienced in different ways, leading to different arousal levels in individuals (Apter, 2013). This implies that some emotions will be more accessible than others (Apter, 2001). Thus it can be argued that when tourists have positive perceptions of how tourism impacts are managed at a site, this contributes to making emotions more accessible in memory. Likewise, negative emotions such as anger, guilt and anxiety tend to be recalled more easily as they are high in intensity (Apter, 2001). Thus if tourists perceive many negative tourism impacts at a site, they can more easily recall emotions that were felt. Thus, we suggest:

H4: Positive tourism impacts enhance emotional accessibility.

H5: Negative tourism impacts enhance emotional accessibility.

Likewise, research shows that positive tourism impacts evoke positive emotions (Su et al., 2018). Consistent with CAT (Lazarus, 1991), tourism impacts as an appraisal, which relates to the significance of such perceptions in relation to the site experience, is likely to generate emotional arousal of some sort. Thus a positive appraisal should generate positive emotions (Hosany, 2012; Jordan et al., 2019). Similarly, in dark tourism studies, tourists have been shown to either repress or accentuate negative emotions (Nawijn & Biran, 2019; Nawijn & Fricke, 2015). Also, tourism development studies have shown that when residents perceive negative tourism impacts, they feel more negative emotions (Jordan et al., 2019). Thus a negative appraisal should elicit negative emotions (Hosany, 2012). Thus, we suggest:

H6: Positive tourism impacts elicit positive emotions.

H7: Negative tourism impacts elicit negative emotions.

Recalling emotions is central to individual's construction of judgments (Nigro & Neisser, 1983). In other words, the retrieval ease of emotions is an antecedent of the evaluation process (Tybout et al., 2005). Reversal theory suggests that the structure of an experience gives a distinctive meaning to the experience itself (Apter, 2001). This meaning incorporates a range of positive and negative emotions, with particular emotions arising from the conjunction of particular values of the relevant

emotion and particular combinations of motivational states (Apter, 2001). These motivational states can facilitate or restrict the accessibility of the emotions stored in memory. Yet, no tourism study has provided empirical evidence of the accessibility of emotions affecting felt emotions. From a tourism experience perspective, tourists are likely to recall the most accessible emotions from an experience (Wang et al., 2021) and this accessibility facilitates the elicitation of positive or negative emotions. Thus, we suggest:

H8: Emotional accessibility is positively associated with positive emotions.

H9: Emotional accessibility is positively associated with negative emotions.

As discussed earlier, tourists' evaluations of tourism impacts can potentially influence their experience (Moyle et al., 2013). Specifically, empirical evidence shows that the more tourists perceived positive impacts of tourism, the more satisfied they were with the site and vice versa (Prayag et al., 2018). This is perhaps relevant to heritage tourists who, motivated by emotional and educational purposes, may derive the greater meaning of their visitation when they perceive and observe benefits from tourism. Thus we assume that perceived tourism impacts as an appraisal can act as an antecedent of tourist satisfaction. In other words, tourist satisfaction can either be enhanced or reduced based on the perceived benefits or costs of tourism development. Likewise, previous research also establishes that affective responses such as emotions can affect tourist satisfaction (Al-Msallam, 2020; del Bosque & San Martín, 2008). In a heritage tourism context, Prayag et al. (2013), Su and Hsu (2013), and Prayag et al. (2022) noted that positive emotions can enhance tourist satisfaction while negative emotions can reduce it. Thus we suggest:

H10: Positive tourism impacts enhance tourist satisfaction.

H11: Negative tourism impacts reduce tourist satisfaction

H12: Positive emotions enhance tourist satisfaction

H13: Negative emotions reduce tourist satisfaction.

Method

Survey instrument

The seven constructs for the study were adapted from the literature (Figure 1). Given that there are no established scales for measuring motivation in the heritage context, the study adopted items from relevant studies (Biran et al., 2011; Poria et al., 2006; Prayag et al., 2018). The 14 items measured three aspects of motivation (site-related motives, knowledge and learning motives, and identity-related motives) on a five-point Likert scale (1 = Strongly Disagree and 5 = Strongly Agree). Tourism impacts were measured using 14 items adapted from several studies (Chi et al., 2017; Ko & Stewart, 2002; Prayag et al., 2018) and measured on a similar scale as the motivation items. Of these, eight and six items measured positive and negative tourism impacts respectively. Emotional accessibility was measured using four items adapted from previous studies (Wang et al., 2021) measuring two autobiographical memory constructs, recollection and vividness on a five-point Likert scale (1 = Strongly Disagree and 5 = Strongly Agree). Felt negative emotions and positive emotions were measured using 12 and 28 items respectively, adapted from several studies (Hosany & Prayag, 2013; Laros & Steenkamp, 2005; Nawijn et al., 2018). Unlike certain types of dark heritage tourism experiences, heritage experiences in general elicit more positive emotions (Nawijn et al., 2018). These emotions were measured on a five-point Likert scale (1 = Not at all, 5 = Very Much). Tourist satisfaction was measured using five items adapted from previous studies (Chen & Chen, 2010; Palau-Saumell et al., 2012; Prayag et al., 2018). The questionnaire was available only in English and pre-tested on a sample of 45 international visitors at Petra, with minor subsequent changes made to the questionnaire.

Sampling and data collection

Data for the present study were collected from international visitors to the UNESCO World Heritage Site of Petra. In 2019, over 1.13 million tourists visited Petra with North America and Europe being the major outbound markets (Ministry of Tourism and Antiquities, 2019). The data were collected by one of the authors of this study who, being a local of Petra and having had an archeological fieldwork experience in the site, was privileged with easier accessibility to and better knowledge of the site. Drawing on a convenience sampling approach, potential participants were approached in various locations including Petra Visitor Center, the lobbies of eight major hotels in the town, and in buses while tourists were heading to the airport or to other local destinations. The data collection took place during the peak season from 25 April, till 8 June 2019. To enhance the diversity and representativeness of the sample, data were collected over around 18 field visits on weekdays and 12 on weekends across different hours of the day. Three inclusion criteria were set in recruiting participants. Respondents should be at least 16 years old, completed their visit to the archaeological site of Petra, and had spent at least one night in the city. By the cut-off date for data collection, a total of 1761 questionnaires were collected, of which 230 were excluded for excessive missing data or when there was evidence that the survey had been completed carelessly. In sum, a total of 1531 valid questionnaires were retained for further analysis achieving a response rate of about 67 percent. To assess the sample adequacy, we followed Hair et al.'s (1995) recommendation of considering the number of items used in the survey as a variable to calculate the sample size. With 1531 usable questionnaires, the sample size in the present study ($N = 1531$, around 1:20) far exceeds the requirements of Hair et al. (1995).

Data analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test the hypothesized model (Figure 1). PLS-SEM is defined in two sets of linear relations, the inner and outer models (Hair et al., 2017). The inner model evaluates the relationship between unobserved or latent variables while the outer model shows the relationship between a latent variable and observed variables (Lohmoller, 1989). The technique is particularly suited for exploratory research (Henseler et al., 2009) and works well with both small and large samples (Hair et al., 2017). SmartPLS 3.2.4 was used for estimating the model in mode A (reflective model), with a bootstrapping procedure ($n = 5000$ resamples) as suggested by do Valle and Assaker (2016). The disjoint two-stage approach was used for modeling (Sarstedt et al., 2019). In the first stage, the lower-order components of tourist motivation were linked to its higher-order construct, with all its lower-order constructs demonstrating adequate reliability (Table 1) and discriminant validity (Table 2) (Sarstedt et al., 2019). In the second stage, the latent scores of the first-order constructs were saved and used as indicators of the higher-order construct of motivation. Common method bias (CMB) was evaluated using Harman's one-factor test (Podsakoff et al., 2003). An exploratory factor analysis (EFA) was conducted on the 77 items representing the various constructs in the conceptual model. The results showed that no single factor accounted for more than 21.6% of the total variance observed. As such, CMB is unlikely to be a significant concern in this study.

Findings

Demographic and travel profile of sample

The sample was almost equally split between male (46.2%) and female (53.8%) international visitors. A good representation of different age groups was achieved with slightly over one-quarter aged 25–34. The majority of visitors were married (56.1%) followed by single (30.2%) and other (13.7%). At least 41.8% of the sample had a post-graduate qualification and slightly over one-quarter had an undergraduate degree. In terms of nationality, the sample was primarily from Europe

Table 1. Constructs and items psychometric properties.

Scales	Mean	Std. Loading	Rho_A	CR	AVE
Site-Related Motives (SRM) (Grand Mean = 4.51)					
SRM1: You felt you should visit this site.	4.51	0.783	0.714	0.816	0.597
SRM2: It is a world-famous site.	4.67	0.795			
SRM3: To see the physical characteristics of the site.	4.35	0.739			
Knowledge and Learning Motives (KLM) (Grand Mean = 4.16)			0.757	0.838	0.565
KLM1: To learn more about the history associated with this site.	4.11	0.751			
KLM2: To learn about the local heritage and culture.	4.08	0.686			
KLM3: To enrich your knowledge of world cultures.	4.46	0.762			
KLM4: A chance for you to develop a deeper understanding of the archeological heritage of this site.	3.99	0.803			
Identity Related Motives (IRM) (Grand Mean = 2.96)			0.823	0.823	0.616
IRM1: You wanted to feel emotionally connected to this site.	3.49	0.895			
IRM2: You feel a sense of belonging to this site.	2.92	0.853			
IRM3: This site is part of your own heritage	2.47	0.613			
Emotional Accessibility (EA) (Grand Mean = 3.74)			0.741	0.853	0.659
EA1: I can easily recall the negative (positive) emotions that I experienced on this trip.	3.72	0.835			
EA2: The negative (positive) emotions that I experienced on this trip are still vivid in my head.	3.64	0.822			
EA4: When recalling them, the (negative) positive emotions that I experienced on this trip are accessible	3.88	0.778			
Positive Tourism Impacts (PTI) (Grand Mean = 4.07)			0.750	0.833	0.503
PTI1: Create jobs for the local community.	4.23	0.792			
PTI2: Create opportunities for local businesses.	4.25	0.805			
PTI3: Help to generate money to invest in the local community	4.19	0.729			
PTI4: Help to preserve history and cultural identity	4.13	0.630			
PTI5: Encourage interactions with locals.	3.56	0.602			
Negative Tourism Impacts (NTI) (Grand Mean = 3.68)			0.702	0.801	0.502
NTI1: Contribute to traffic congestion.	3.69	0.685			
NTI2: Contribute to litter and pollution.	3.69	0.678			
NTI3: Attract too many vendors on site that are persistent.	3.59	0.614			
NTI4: Lead to animals being mistreated for tourism purposes.	3.80	0.662			
NTI5: Contribute to raising the price of goods and services (e.g. entrance fees).	3.63	0.703			
Negative Emotions (NE) (Grand Mean = 1.39)			0.911	0.921	0.515
NE1: Angry	1.35	0.712			
NE2: Irritated	1.54	0.744			
NE3: Annoyed	1.45	0.728			
NE4: Sad	1.35	0.700			
NE5: Down-hearted	1.29	0.709			
NE6: Unhappy	1.22	0.789			
NE7: Stress	1.40	0.680			
NE8: Nervous	1.39	0.614			
NE9: Disappointed	1.52	0.724			
NE10: Regret	1.41	0.714			
NE11: Displeasure	1.40	0.764			
Positive Emotions (PE) (Grand Mean = 3.81)			0.962	0.964	0.529
PE1: Grateful	4.08	0.674			
PE2: Appreciative	4.16	0.696			
PE3: Thankful	3.99	0.748			
PE4: Hopeful	3.55	0.739			
PE5: Optimistic	3.60	0.735			
PE6: Encourage	3.55	0.731			
PE7: Inspired	3.78	0.711			
PE8: Uplifted	3.73	0.697			
PE9: Elevated	3.68	0.737			
PE10: Joy	3.98	0.798			
PE11: Glad	3.99	0.781			
PE12: Happy	4.13	0.758			
PE13: Love	3.57	0.763			
PE14: Trustful	3.36	0.728			
PE15: Delight	3.79	0.770			
PE16: Cheerful	3.74	0.770			

(*Continued*)

Table 1. Continued.

Scales	Mean	Std. Loading	Rho_A	CR	AVE
PE17: Enthusiastic	3.98	0.764			
PE18: Warm-hearted	3.68	0.776			
PE19: Caring	3.52	0.722			
PE20: Fascination	4.32	0.620			
PE21: Surprise	4.12	0.651			
PE22: Serene	3.65	0.692			
PE23: Content	3.81	0.717			
PE24: Peaceful	3.69	0.643			
Tourist Satisfaction (TS) (Grand Mean = 4.55)			0.899	0.927	0.760
TS1: It was the right thing to visit this site	4.59	0.860			
TS2: I am satisfied with the visit to this site	4.61	0.893			
TS3: I truly enjoyed the experience of this site	4.54	0.884			
TS4: I feel good about visiting this site	4.47	0.850			

Table 2. Discriminant validity using Fornell and Larcker and HTMT methods of first-order constructs.

Latent constructs	SRM	KLM	IRM	EA	PTI	NTI	NE	PE	TS
SRM	**0.773**	[0.710]	[0.324]	[0.320]	[0.282]	[0.116]	[0.206]	[0.304]	[0.459]
KLM	0.499	**0.752**	[0.507]	[0.423]	[0.307]	[0.082]	[0.202]	[0.428]	[0.403]
IRM	0.266	0.399	**0.785**	[0.361]	[0.163]	[0.108]	[0.149]	[0.383]	[0.151]
EA	0.226	0.318	0.283	**0.812**	[0.214]	[0.056]	[0.064]	[0.345]	[0.230]
PTI	0.199	0.230	0.100	0.159	**0.710**	[0.380]	[0.184]	[0.313]	[0.496]
NTI	0.079	0.060	−0.045	0.028	0.271	**0.709**	[0.167]	[0.089]	[0.189]
NE	−0.160	−0.173	−0.133	−0.024	−0.153	0.131	**0.718**	[0.181]	[0.299]
PE	0.248	0.369	0.338	0.294	0.264	0.066	−0.179	**0.727**	[0.449]
TS	0.353	0.332	0.137	0.190	0.407	0.153	−0.278	0.407	**0.872**

Bold figures show the square root of AVE, below the diagonal are the inter-construct correlations, above the diagonal are the HTMT ratios in brackets. SRM = Site Related motives, KLM = Knowledge & Learning Motives, IRM = Identity-Related Motives, EA = Emotional Accessibility, PTI = Positive Tourism Impacts, NTI = Negative Tourism Impacts, NE = Negative Emotions, PE = Positive Emotions, TS = Tourist Satisfaction.

(Italy 10.7%, France 10.6%, and Germany 5%), the UK (15.1%), the USA (11.6%), Australia (12.3%), South Africa (5.4%), and other countries (29.3%). The majority of visitors were on their first visit (88.5%), traveling for leisure/holiday purposes (63%), visiting cultural and heritage sites (34%), visiting friends and relatives (0.9%), and rest (2.1%). The sample traveled mainly with their spouse/partner (39.9%), followed by family members (15.1%), friends (18.2%), alone (3%) and with others (23.8%).

Outer model evaluation

Following the recommendation of Hair et al. (2017), reliability, convergent, and discriminant validity of the main first-order constructs were established first before testing the inner model. The composite reliability (CR) of all the scales was above the recommended threshold of 0.7 (see Table 1), after deleting the following items (3 SRM, 1 IRM, 1 EA, 3 PTI, 1 NTI, 1NE, 4 PE, and 1 ST). Item loadings of 0.6 and above were retained for further analysis given that Rasoolimanesh et al. (2017) argue that they should only be removed if they negatively affect the evaluation of other psychometric properties. Given that all Rho_A's (considered a superior measure than Cronbach's α) and CR were above the minimum threshold of 0.7 (Hair et al., 2017), all items and constructs were internally consistent (Table 1). The Average Variance Extracted (AVE) of all constructs met the threshold of 0.5 and above, suggesting that the convergent validity of the latent constructs was adequate (Fornell & Larcker, 1981).

Discriminant validity was examined by comparing the square root of AVE for latent constructs with the correlations among them (Fornell & Larcker, 1981). Table 2 suggests strong evidence of discriminant validity. In addition, the heterotrait–monotrait (HTMT) ratio was used to further

test for discriminant validity. This ratio is considered superior to Fornell and Larcker's method (Henseler et al., 2015). All the HTMT ratios were below the threshold of 0.85, indicating good discriminant validity.

Reflective–reflective construct

Following Sarstedt et al. (2019), tourist motivation was specified as a higher-order reflective–reflective construct in the model. The higher-order construct met both reliability and convergent validity requirements with CR greater than 0.7 (CR = 0.809) and AVE greater than 0.5 (AVE = 0.588). As shown in Table 3, the higher-order reflective–reflective construct also met the criteria for both methods (Fornell & Larcker and HTMT ratios) of assessing discriminant validity. Thus the higher-order construct displayed reliability and validity.

Inner model evaluation and hypothesis testing

The inner model was evaluated using standardized path coefficients (β) and their associated significance levels. The model explains 31% of the variance in tourist satisfaction, 13.6% of the variance in emotional accessibility but very low variance in positive (5.9%) and negative (0.3%) tourism impacts. The model explains only 1.8% of the variance in negative emotions and 13.5% in positive emotions. The Standardized Root Mean Square (SRMR = 0.057) value for model fit is acceptable, less than the recommended threshold of 0.08 (Hu & Bentler, 1995). The effect sizes are reported in Table 4. According to Cohen's (1992) guidelines, values close to 0.02 denote small effects, 0.15 for medium effects, and 0.35 for large effects. All of the effects were small. Stone-Geisser's Q^2 values were estimated using a blindfolding procedure to assess the predictive relevance of the model (Hair et al., 2017). All Q^2 values were greater than zero, indicative of satisfactory predictive relevance ($Q^2_{EA} = 0.087$, $Q^2_{PTI} = 0.028$, $Q^2_{NTI} = 0.003$, $Q^2_{PE} = 0.070$, $Q^2_{NE} = 0.009$, and $Q^2_{TS} = 0.231$).

Table 4 shows the bootstrapped standardized path coefficients and confidence intervals. Tourist motivation had a positive influence on positive tourism impacts ($\beta = 0.242$, $p < 0.001$), thus supporting H_1. Tourist motivation also had a positive influence on emotional accessibility (see Table 4), supporting H_3 ($\beta = 0.343$, $p < 0.001$). This means that tourist motives have the capacity to energize the recall and vividness of felt emotions at a heritage site. Perceived positive tourism impacts had also the same effect on emotional accessibility, suggesting that the more visitors perceived positive impacts of tourism, the greater was their ability to access the positive emotions felt on site ($\beta = 0.079$, $p < 0.01$), thus supporting H_4. Yet, this was not the case for perceptions of negative tourism impacts and emotional accessibility, thus reject H_5. As predicted, the more visitors perceived positive tourism impacts, the more they felt positive emotions ($\beta = 0.224$, $p < 0.001$) and the less negative impacts they perceived, the less they felt negative emotions ($\beta = 0.132$, $p < 0.001$), thus supporting H_6 and H_7 respectively.

Interestingly, the more easily accessible the positive emotions, the more positive emotions visitors felt ($\beta = 0.259$, $p < 0.001$), but this relationship did not hold true for negative emotions. Thus

Table 3. Discriminant validity of higher-order constructs.

Latent constructs	Tourist motivation (TM)
TM	**0.767**
EA	0.361 [0.521]
PTI	0.242 [0.341]
NTI	0.058 [0.129]
NE	−0.182 [0.237]
PE	0.400 [0.507]
TS	0.367 [0.472]

Bold figures show the square root of AVE, HTMT ratios in brackets.

Table 4. Path coefficients and size effects.

Paths	Std. Path coeff. (β)	t-stat	p-value	BCa confidence intervals 2.5%	BCa confidence intervals 97.5%	f^2	Hypothesis Supported?
H_1 Tourist Motivation→ Positive Tourism Impacts	0.242	8.92	$p < 0.001$	0.186	0.293	0.062	Yes
H_2 Tourist Motivation→ Negative Tourism Impacts	0.058	1.91	$p > 0.05$	−0.006	0.114	0.003	No
H_3 Tourist Motivation→ Emotional Accessibility	0.343	11.97	$p < 0.001$	0.283	0.396	0.128	Yes
H_4 Positive Tourism Impacts → Emotional Accessibility	0.079	3.45	$p = 0.001$	0.031	0.125	0.006	Yes
H_5 Negative Tourism Impacts → Emotional Accessibility	−0.010	0.39	$p > 0.05$	−0.065	0.039	0	No
H_6 Positive Tourism Impacts → Positive Emotions	0.224	8.35	$p < 0.001$	0.171	0.274	0.056	Yes
H_7 Negative Tourism Impacts → Negative Emotions	0.132	4.74	$p < 0.001$	0.075	0.184	0.018	Yes
H_8 Emotional Accessibility → Positive Emotions	0.259	10.25	$p < 0.001$	0.209	0.307	0.075	Yes
H_9 Emotional Accessibility → Negative Emotions	−0.028	1.18	$p > 0.05$	−0.076	0.019	0.001	No
H_{10} Positive Tourism Impacts → Tourist Satisfaction	0.271	8.96	$p < 0.001$	0.213	0.331	0.090	Yes
H_{11} Negative Tourism Impacts → Tourist Satisfaction	0.085	4.74	$p < 0.001$	0.037	0.130	0.009	Yes*
H_{12} Positive Emotions → Tourist Satisfaction	0.313	11.25	$p < 0.001$	0.259	0.367	0.129	Yes
H_{13} Negative Emotions→ Tourist Satisfaction	−0.191	7.24	$p < 0.001$	−0.243	−0.141	0.049	Yes

*Opposite direction.

the results provide evidence to support H_8 but reject H_9. Using the recommended guidelines of Williams and MacKinnon (2008), mediating effects were investigated using the 95% confidence intervals with a bootstrapping procedure ($n = 5000$). The results show that tourist motivation has a significant indirect effect on positive emotions via positive tourism impacts (indirect effect = 0.054, CI[0.035:0.075]). Perceptions of positive impacts have an indirect effect on positive emotions via emotional accessibility (indirect effect = 0.020, CI[0.008:0.0034]). Both perceptions of positive ($\beta = 0.271$, $p < 0.001$) and negative tourism impacts ($\beta = 0.085$, $p < 0.001$) have a significant influence on tourist satisfaction, supporting H_{10} but not necessarily H_{11} (results are in the opposite direction). Surprisingly, the more negative impacts they perceived the more satisfied they were. Investigating the mediating effects following the procedure described previously, the results showed that tourist motivation had indirect effects on tourist satisfaction via emotional accessibility and positive emotions (indirect effect = 0.028, CI[0.019:0.038]). Lastly, as hypothesized, the more positive emotions tourists felt, the more satisfied they were with the site experience ($\beta = 0.313$, $p < 0.001$) and the less negative emotions they felt the more satisfied they were with the experience ($\beta = -0.191$, $p < 0.001$), thus supporting H_{12} and H_{13} respectively. Finally, we assessed the effects of several control variables on the dependent variable satisfaction, and the results showed that tourists' education ($p = 0.750$), nationality ($p = 0.466$), travel frequency ($p = 0.289$), and travel purpose ($p = 0.147$) had no effect.

Discussion and implications

Based on CAT and reversal theory, the objective of this study was to evaluate a theoretical model postulating that tourist motivation and tourism impacts (positive and negative) determine the

extent to which tourists can access (emotional accessibility) felt positive and negative emotions. In turn, these felt emotions determine their post-trip site evaluation (i.e. tourist satisfaction). The model highlights that tourist motivation is an important cognitive concept that affects only positive tourism impact assessments, while also increasing the accessibility of emotions to visitors in their evaluation of felt on-site emotions. This finding suggests that motivational states can be drivers of emotions as highlighted by the central tenets of reversal theory (Apter, 1982, 2001). Both tourism impacts (positive and negative) and emotions (positive and negative) affect tourist satisfaction in accordance with CAT (Lazarus, 1991). This implies that cognitive evaluations as appraisals have mostly an influence on positive emotions by allowing tourists to access their emotions in memory. In turn, the felt positive and negative emotions affect their behavioral response. These findings have both theoretical and managerial implications.

Theoretical implications

Beyond the support for CAT in that post-trip evaluations depend on mainly emotions and cognitive concepts such as travel motivation, perceived tourism impacts, and emotional accessibility, the overall results align with studies suggesting that different motives drive perceptions of tourism impacts (Zhao & Timothy, 2017; Prayag et al., 2018). Albeit in a different context to the study of Prayag et al. (2018), support was found for site related, knowledge/learning, and identity motives having a positive influence on evaluations of positive tourism impacts. In this way, the findings highlight that integral role that motivation and emotion play in the structure of an experience as suggested by reversal theory (Apter, 2001). Tourists with high motivation on these factors had more positive perceptions of tourism impacts (H1), highlighting the importance of managing site characteristics and embedding knowledge/learning in tourist experiences for maintaining cultural sustainability of heritage tourism places. These findings echo Alazaizeh et al. (2016b) observation that tourists are interested in the preservation of heritage sites through their impressions of how sites are managed. However, perceptions of negative impacts were not significantly influenced by tourist motivation (H2), highlighting that tourists are seeking motive consistency rather than inconsistency as an appraisal in visiting heritage sites. Their focus shift to identifying positive rather than negative impacts of tourist visitation on the site to reinforce their initial visitation motives, highlight the different motivational styles that tourists may have for visiting World Heritage Sites. Given that the result contradicts Prayag et al. (2018) this could be attributed to two reasons. First, Prayag et al. (2018) study was focused on domestic visitors who potentially are more critical of the heritage experience when the site is part of their heritage, and therefore are more sensitive to negative tourism impacts, unlike tourists in our study that have low identification with the heritage presented at the site. Second, similar to resident studies that employ social exchange theory, which suggests that residents can downgrade the importance of negative tourism impacts at the expense of positive ones (Nunkoo and Ramkissoon 2011a, 2011b), we found a similar trade-off in our results. Thus when tourists are motivated by identity-related, knowledge/learning, and site characteristics motives, costs (negative tourism impacts) seem to fall short of perceived benefits of tourism, highlighting the importance of positive tourism impacts, which is aligned with existing tourism impact literature focused on mainly residents (Chi et al., 2017; Ko & Stewart, 2002).

Reversal theory (Apter, 1982) suggests that motivational states allow individuals to interpret their emotions. Lending support to this theory, we found that tourists highly motivated by site characteristics, knowledge/learning, and identity have high emotional accessibility (H3), thus highlighting the importance of this concept in understanding tourists' emotions at heritage sites. Thus tourist motivation enabled tourists to access and capture the vividness of their experiences and express them as recalled emotions as suggested in other studies (Tamir et al., 2013). Based on CAT (Lazarus, 1991), existing resident studies on tourism impacts have argued that cognitive evaluations affect emotions (Jordan et al., 2019; Zheng et al., 2021), and we found that this relationship not only holds true for studies focused on tourists' perceptions and positive emotions but also that

perceived positive tourism impacts contribute positively to emotion accessibility. Beyond the festival context (Cheng et al., 2020) and coastal tourism (Güzel et al., 2020), heritage tourism motivation, therefore, positively affects positive emotions. In line with the study of Yan et al. (2016) which focused on dark tourism motives and emotional responses of fear and depression, we demonstrate a significant link between perceptions of negative tourism impacts and negative emotions (H7). The more negative impacts tourists perceived, the more negative emotions they felt, aligning with results from resident-focused studies on tourism development (Jordan et al., 2019).

Contrary to our proposition, we could not establish a significant link between negative tourism impacts and emotional accessibility (H5). A plausible explanation can be found in the 'rosy view' effect (Mitchell et al., 1997), whereby negative emotions are short-lived and individuals despite experiencing them, their subsequent recollection of that event is more positive than the actual experience. Thus making negative emotions less accessible in tourism contexts that are hedonistic, while making positive emotions more accessible. This view is supported by our results showing a positive relationship between positive emotions and emotional accessibility (H8), while failing to confirm the relationship between negative emotions and emotional accessibility (H9). Thus, these results overall suggest that the retrieval ease of emotions is an antecedent of its evaluation process (Tybout et al., 2005) only for positive emotions. For negative emotions, tourists may be engaging in a regulatory focus whereby they cognitively do not process contradictory emotions they felt on site that might challenge their visitation motives in the first instance.

Aligned with the study of Prayag et al. (2018), we found that perceptions of positive tourism impact improved tourist satisfaction (H10) but contrary to the same study we found that negative tourism impacts actually increased, rather than decreased, tourist satisfaction (H11 supported but in opposite direction). Consumer behavior studies (e.g. Khan et al., 2010) have argued that negative emotions can have a rosy side in that they increase satisfaction over time. Our findings align with this view in that despite tourists perceiving negative impacts onsite, they still maintained high levels of satisfaction by downgrading the importance of those impacts (Alrawadieh et al., 2019b). However, tourists did not use the same heuristic in evaluating emotions and satisfaction. While supporting previous studies (Prayag et al., 2013; Su & Hsu, 2013) on the positive relationship between positive emotions and tourist satisfaction (H12), negative emotions felt reduced tourist satisfaction (H13). Thus negative tourism impacts and negative emotions have asymmetric effects on tourist satisfaction.

Managerial implications

The findings have important implications for cultural sustainability and heritage site management. Given that cultural sustainability concerns preservation and presentation of heritage, both tangible and intangible (Stylianou-Lambert et al., 2014), the findings highlight how positive tourism impacts through heritage preservation and linking site profitability to local community initiatives are important to international tourists. Tourists are interested in whether the site creates job for local communities and use the on-site experience as a conduit for interacting with locals. Thus, as part of the UNESCO World Heritage Site status, community benefits as well as proper site management are valued by international visitors. Hence, it is in the interest of the heritage site managers to communicate to tourists how their visit contributes to the well-being of the local community in various ways. This may be achieved through different methods such as highlighting these benefits, albeit briefly, on purchased entrance tickets and other points of sale. Tour guides may also take an active role in communicating these benefits as part of their job.

However, while social interactions are important to tourists, the persistence of vendors to sell memorabilia and souvenirs to tourists contributes to perceptions of negative tourism impacts. Given that tourists also perceive to some extent that traffic congestion, litter, and pollution are problems, site managers should review the sustainable management practices that are in place to

manage negative tourism impacts. These issues are particularly detrimental to the image and experience offered by a World Heritage Site and could affect reaccreditation if not dealt with (Carreira et al., 2021). Beyond the sustainability of heritage sites, heritage site managers should also view mitigating negative impacts of tourism as a tool to improve tourists' felt emotions and enhance their overall satisfaction.

Cultural sustainability also implies a consideration for intangible heritage. Given that tourists' motives included identification with the site as part of their heritage, communication activities, tour guiding services, and on-site experience management for these tourists should be different from those driven by other motives. These tourists have more negative perceptions and experiences of the site. Despite the high satisfaction levels with the site in general, customer experience management principles including the identification of customer touchpoints, experience co-creation opportunities, and sensorial marketing should be applied to improve the visitor experience. In particular, sensorial marketing can facilitate tourists to access felt emotions and heighten the positive emotions that are elicited through the site experience. Emotion accessibility and felt emotions can also be heightened cognitively through the provision of information by tour guides on the site and QR codes.

Conclusion, limitations, and future research areas

The study advances heritage tourism and cultural sustainability by highlighting psychological factors that affect the heritage tourism experience. In particular, affect through emotional accessibility and felt emotions is evaluated to highlight their important role in driving visitor satisfaction. However, the study is not without limitations. First, the sample is restricted to English-speaking international visitors to a UNESCO World Heritage Site (i.e. Petra), which limits the generalizability of the results. Second, the range of motives and types of tourism impacts evaluated is limited. Third, other behavioral consequences such as word-of-mouth recommendations and revisit intentions are not evaluated. Thus these limitations give rise to future research opportunities, such as the incorporation of different types of authenticity (objective and existential) in models employing CAT. Also, the perceived benefits that tourists convey to a World Heritage Site status must be incorporated in models evaluating heritage tourism and the subsequent impact on post-consumption behaviors. In addition, psychological variables such as visitor engagement and place attachment can be considered as outcomes of emotional accessibility that remain to be tested. Finally, longitudinal studies of visitor experience at heritage sites such as Petra need to be carried out to further understand cultural sustainability of such sites.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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