

NATURAL HERITAGE TOURISM: DOES CO-CREATION MATTER?

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Abstract

Using a mixed-methods approach, this study investigates value co-creation within the context of natural heritage tourism. It focuses on those visiting the largest lake-water cave in the world: Alisadr, Iran. Semi-structured interviews ($n=22$) were conducted to explore visitor experiences, complemented by a face-to-face questionnaire ($n=850$) investigating the relationships among perceptions of value co-creation, leisure involvement, perceived experience value, satisfaction, and braggart word-of-mouth. The findings demonstrate that perceived value co-creation, leisure involvement, and perceived experience value influence visitor satisfaction and braggart word-of-mouth, with theoretical and managerial implications provided by way of conclusion.

Keywords: natural heritage; value co-creation; customer satisfaction; word-of-mouth; leisure experience

Bionotes:

Bailey Ashton Adie is a Visiting Research Fellow at Wakayama University, Japan. Her research interests include sustainable tourism, World Heritage tourism, tourism marketing and branding, community resilience to climate change and disasters, second homes, community-based tourism, tourism and development, and heritage tourism. She is the author of the Routledge book, *World Heritage and Tourism: Marketing and Management*. She is also the

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Ethics Statement:

The project for which this data was collected received ethical approval from Heriot-Watt University, UK in 2019. All participants (both interview and survey) signed a written consent form emphasising the following points:

- I confirm that I have read and understood the information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time, without having to give a reason and without any consequences.
- I understand that I can withdraw my data from the study at any time.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies me will be made publicly available.

1. Introduction

While heritage tourism remains a niche market within the broader tourism and travel landscape, the concept of heritage encompasses both natural and cultural features, with some popular sites exhibiting both (Fennel, 2015; Newsome et al., 2013). Cultural and natural heritage are often discussed in tandem, yet the distinction between the two is significant. Natural heritage concerns “natural features, geological and physiographical formations and delineated areas that constitute the habitat of threatened species of animals and plants and natural sites of value from the point of view of science, conservation or natural beauty” (UNESCO, 2020). However, while natural heritage has a clear definition, natural heritage *tourism* is more complex due to the array of ways in which tourism in natural environments is discussed. This makes sub-group distinctions difficult to identify, often relying on activity-driven tourist segmentations and interactive service offerings (Hvenegaard, 2002).

The importance of consumer involvement and the co-creation of value are highlighted across literature within the cultural experience context (Forgas-Coll et al., 2017), with Jung et al. (2017) emphasizing the influence these have on tourists’ assessments of overall quality of service, satisfaction, and word-of-mouth (WoM). Co-created experiences are shaped by interactions between joint actors, which create mutual outcomes (Taheri et al., 2017). Value is usually created during the “process of interactions and transactions occurring between tourists and tourism service providers...during moments of contact in which both are involved” (Buonincontri et al. 2017, 266).

However, such interactions and transactions can result in both negative and positive interpretations of co-created experiences and involvement with service offerings at destinations and heritage sites. For example, crowding is frequently observed as having a negative impact on tourists’ overall assessments (e.g., satisfaction, WoM, perceived values) of co-creation of value and involvement (Anton et al., 2018; De Angelis et al., 2012; Gannon et al., 2019). Yet, to date, the literature discussing perceptions of value co-creation in the context of natural heritage remains limited (Su et al., 2016). Thus, this paper addresses this gap by investigating the effects of leisure involvement, perceptions of value co-creation, and perceived experience value on visitor satisfaction and braggart WoM through a mixed-methods study of domestic visitors to an Iranian natural heritage site.

2. Literature review

2.1 Theoretical background

It is crucial to differentiate between *natural heritage* tourism, *natural area* tourism (Newsome et al., 2013), and *nature-based* tourism (Fennel, 2015). Natural heritage tourism refers to travel to sites specifically designated as natural heritage, marked by international, national, or local signifiers of importance, for the purpose of experiencing an area's natural heritage attributes as opposed to merely using the setting for outdoor recreation. Visit motivations therefore serve as key differentiating factors. It must be noted that in certain circumstances, for example in the case in fragile ecosystems or dangerous environments, where a natural heritage site provides only controlled experiences, all visitors will inherently be natural heritage tourists. An example of this would be the highly controlled experience at the Forest of the Cedars of God (Horsh Arz el-Rab) World Heritage site where visitation is akin to experiencing "a sterile tree museum" (Shackley, 2005, p.142). This definition is more specific than that of natural area tourism (Newsome et al., 2013) or nature-based tourism (Fennel, 2015), both of which include adventure tourism as a sub-type. It also differs from ecotourism, which places greater focus on conservation (Fennel, 2015). This is not to say that natural heritage tourists cannot be eco-tourists, natural area tourists, or nature-based tourists, but not all eco-tourists, natural area tourists, or nature-based tourists are natural heritage tourists.

Natural heritage attributes are found world-over and are often an important element of national tourism initiatives. Thus, it is apposite to discuss this tourism niche within the context of current scholarly trends. One emerging topic centers on co-created tourist experiences (Buonincontri et al., 2017; Calver & Page, 2013; González-Mansilla et al., 2019; Taheri et al., 2017; Prebensen, 2017; Sugathan & Ranjan, 2019). Investigation of this topic is embryonic; there remains little engagement with the concept in relation to natural heritage sites (Su et al. (2016) notwithstanding). What exists is predominantly focused on co-creation activities in a cultural (*not* natural) heritage context, particularly museums (Antón et al., 2018; Forgas-Coll et al., 2017; Jung & tom Dieck, 2017), festivals (Alexiou, 2019), and historic sites (Chen, 2018). Therefore, this study extends work within the wider co-creation and tourism field by expanding its application to natural heritage consumption.

2.2 Perception of value co-creation

Co-creation is the joint development between consumers and service providers of a unique and personalized experience which results in the creation of value for both parties (Taheri et al., 2017). This is accomplished by providing a platform wherein they can "add input and personal resources into the service" (Mathis et al., 2016, p.64). Co-creation as value enhancing activity is supported by Holbrook (2006), who highlights the importance of the consumer in the creation

of value as consumption is intrinsically experiential and personal. Co-creation is thus well-suited to the tourism context as, per Zhang et al. (2019, p.194), “tourism experiences are fundamentally related to co-creation value”. Tourism experience co-creation allows for fluidity of traditional service roles, where both tourists and service providers play the role of consumer *and* producer (Ramaswamy & Ozcan, 2019; Prayag et al., 2020). However, this does not preclude continued value creation post-consumption, as experiences may extend beyond the involvement of tourism service providers (Prebensen, 2017).

For Campos et al. (2018, p.391), tourism experience co-creation is “the sum of the psychological events a tourist goes through when contributing actively through physical and/or mental participation in activities and interacting with other subjects in the experience environment”. This is particularly important as it allows for the enhancement of value for all participants by focusing the tourist experience on human interaction (O’Cass & Sok, 2015; Taheri et al., 2021a). Binkhorst and Den Dekker (2009) contend that the development of co-creative tourist experiences extends to local communities within tourist areas, providing agency to those who have often been treated as a toured aspect of the destination. Thus, while tourism co-created experiences provide experiential value for providers and participants, they may also do so for other stakeholders.

2.3 Leisure involvement

While co-created experiences can occur between a variety of visitor types and stakeholders, research highlights the importance of leisure involvement in the context of tourism co-creation (Antón et al., 2018; Prebensen et al., 2013). This paper conceptualizes involvement from the perspective of McIntyre’s (1989) higher-order multidimensional construct composed of three dimensions: attraction, centrality, and self-expression. Attraction relates to the importance given to an activity by an individual and subsequent satisfaction and enjoyment with that activity. Centrality is the role that the activity plays in an individual’s overall life, specifically how fundamental it is. Self-expression deals with the connection between identity (internal *and* external) and the activity. Within this context, involvement is considered an individual’s personal attachment or connection to a leisure activity or experience (Gursoy & Gavcar, 2003; Prebensen et al., 2013). This personal connection can be the result of previous experiences with the leisure activity (Forgas-Coll et al., 2017).

The importance of previous leisure involvement is advocated by Chang and Gibson (2011), whose high-involvement participants proved more likely to consistently choose paddling, the activity under study, as both leisure and tourism activity. Thus, heightened leisure

involvement can drive participants to consistently select similar experiences. By extension, this may inspire loyalty to either destinations or service providers (Mathis et al., 2016). Selecting similar activities can, in-turn, stimulate greater willingness to engage in co-creation; per Antón et al.'s (2018) museum visitors, this 'prior experience' was a greater stimulus to participate in co-creation activities than pre-trip planning. Calver and Page (2013, p.27) also contend that "a visitor to a heritage site is likely to arrive with interest and motivation to learn [and] a level of knowledge obtained from the media and formal education". Thus, in natural heritage contexts, leisure involvement may be significantly higher among active heritage tourists and may stimulate deeper co-creation thanks to cognizance of heritage assets therein.

2.4 Perceived experience value

Experiential value is core to the tourism sector, as perceived value influences eventual decision-making processes in regard to both repeating and sharing experiences with others (González-Mansilla et al., 2019). For Prebensen et al. (2013, p.244), "experience value is comprised of the benefits the tourist perceives from a journey and stay in a destination, including those assets or resources that the tourist, other tourists and the host bring to the process of co-creating experiences". Given the significance of perceived experience value in the context of tourism and its intrinsic connection to co-created activities, co-creation can positively influence perceived experience value (Sugathan & Ranjan, 2019). This is supported by Pelletier and Collier (2018) who found that value is added by consumers who actively participate in experiences while simultaneously interacting with others.

In a heritage context, Antón et al. (2018) note that co-creation was fundamental in generating experience value; stimulating more in-depth, positive on-site experiences. Perceived experience value was originally conceptualized as a higher-order multidimensional construct comprised of quality value; economic value; emotional value; and knowledge value (Prebensen & Xie, 2017). Further, leisure involvement increases perceptions of experience quality (Altunel and Erkhurt, 2015; Antón et al., 2018; Chen & Chen, 2010; Forgas-Coll et al., 2017). In turn, experience quality can have a significant impact on perceived value within the context of heritage tourism, where, according to Prebensen and Xie (2017, p.173) "when a tourist has good skills and prior experience, he or she gains more value from the experienced activities". Thus:

H1.Visitors' perceptions of site co-creation have a positive impact on visitors' perceived experience value.

H2. Visitors' leisure involvement has a positive impact on visitors' perceived experience value.

2.5 Customer satisfaction

Heritage destinations must deliver positive experiences to "ensure satisfaction and revisit intentions" (Jung & tom Dieck, 2017, p.146). Satisfaction, then, is strongly influenced by experience quality. Per Chen and Chen (2010, pp.33-34), "both experience quality and perceived value are supported as direct determinants of satisfaction". This aligns with extant discourse (Forgas-Coll et al., 2017; Oviedo-García et al., 2019; Prebensen et al., 2016). Investigating nature-based winter activities, Prebensen and Xie (2017) highlight that value from an experience is the predominant basis for satisfaction. Thus, perceived experience value may have a significant impact on customer satisfaction. Consequently, and given **H1**, perceptions of site value co-creation can also impact upon satisfaction indirectly through perceived experience value (Prebensen & Xie, 2017). However, co-creation activities can also directly influence customer satisfaction without the mediating factor of perceived experience value. This emerges across several studies (Mathis et al., 2016; Zhang et al., 2019), where satisfaction with co-created experiences positively influences overall satisfaction.

Similarly, leisure involvement is considered a precursor to trip satisfaction (Altunel & Erkhurt, 2015; Lu et al., 2015; Mathis et al., 2016). Prebensen and Xie (2017) again note leisure involvement's indirect impact on satisfaction via perceived experience value. However, Forgas-Coll et al. (2017) highlighted a direct connection between higher levels of involvement and heightened satisfaction. Thus, leisure involvement is observed as directly impacting on customer satisfaction. Accordingly:

H3. Visitors' perceived experience value has a positive impact on visitors' satisfaction.

H4. Visitors' leisure involvement has a positive impact on visitors' satisfaction.

H5. Visitors' perception of site value co-creation has a positive impact on visitors' satisfaction.

H6. Visitors' perceived experience value mediates the relationship between perceptions of value co-creation and visitors' satisfaction.

H7. Visitors' perceived experience value mediates the relationship between leisure involvement and visitors' satisfaction.

2.6 Braggart Word-of-Mouth (WoM)

WoM remains important to tourism marketing (Thompson et al., 2018). Although the motivations for traditional WoM are numerous (Gannon et al., 2019), braggart WoM is more

specific. According to De Angelis et al. (2012), braggart WoM is defined as the use of either positive or negative WoM with the goal of self-enhancement. Positive WoM is derived from the speaker's own experience while negative transmission occurs when relaying the experiences of other people. According to Pelletier and Collier (2018, 466), "when purchased experiences become deeply connected to and attached to one's sense-of-self, word-of-mouth behaviours concerning experiences of high quality should be motivated by the individual's desire for self-enhancement." Thus, experiences that generate this type of WoM, due to their intrinsic connection to self-identity, result in longevity of communication (Gannon et al., 2019). Therefore, leisure involvement, tied to personal identity (Gursoy & Gavcar, 2003; Prebensen et al., 2013), may have a positive impact on braggart WoM.

Leisure involvement can also play an indirect role in WoM transmission "via the mediating effects of experience quality and satisfaction" (Altunel & Erkhurt, 2015, p.219). In previous studies, customer satisfaction has demonstrated a positive relationship with post-visit behavioural intentions (e.g., WoM) (Forgas-Coll et al., 2017; Oviedo-García et al., 2019). Similarly, experience quality is essential to ensuring an initial personal connection to an experience as well as braggart WoM (Gannon et al., 2019), with this directly influencing the growth in perceived value which, in turn, furthers the likelihood of generating WoM (Forgas-Coll et al., 2017). Perceptions of value co-creation may thus be similarly viewed as a WoM generator:

H8. Visitors' perceived experience value has a positive impact on the visitors' braggart WoM.

H9. Visitors' customer satisfaction has a positive impact on the visitors' braggart WoM.

H10. Visitors' leisure involvement has a positive impact on the visitors' braggart WoM.

H11. Visitors' perception of the site value co-creation has a positive impact on the visitors' braggart WoM.

H12. Visitors' satisfaction mediates the relationship between leisure involvement and braggart WoM.

Aforementioned concepts and their relationships, as per the above hypotheses, are presented in **Figure 1**.

<< FIGURE1>>

3. Methodology

3.1 Data collection and contextual gap

Data were collected from Alisadr cave. Located in north-west Iran, Alisadr is the largest lake-water cave in the world. Visitors primarily experience the cave by boat, although some areas are accessible by foot. Prehistoric paintings indicate that the cave was occupied millennia ago but, at some point in its history, the cave fell out of use even though the local population continued to benefit from its resources. It was only after the cave was fully explored in 1963 that it was considered for development as a tourist destination, opening to the public in 1975. The industry has improved the local community's quality of life, although residents sometimes feel side-lined by tourism activities (Ahadian, 2013). The cave's importance has been recognized at the national level through its inscription on Iran's UNESCO World Heritage tentative list in 2007, with emphasis placed on its unique natural attributes.

A two-stage mixed method sequential exploratory design combining quantitative and qualitative methods was adopted (Gannon et al., 2019). The qualitative stage was designed to reflect areas neglected by previous studies, investigating the underlying constructs that motivate or constrain consumer value co-creation in heritage sites. This exploratory stage informed the conceptual model tested during the quantitative stage (Creswell & Creswell, 2018). Thus, a series of semi-structured interviews were conducted as the initial mode of investigation, followed by questionnaires completed by tourists visiting Alisadr cave.

3.2 Study 1: Qualitative phase

Data were collected through complementary purposive and snowball sampling. This two-pronged approach allowed for the purposive selection of relevant respondents while also providing the potential to further expand the respondent pool through initial connections (Taheri et al., 2021b). Specific to this study, this meant that those who were approached as they had recently visited Alisadr cave were then asked to recommend friends and relatives who had also recently (prior 12 months) visited the caves who wished to be interviewed. The logic behind this sampling technique was that we were interested in those who had visited the site during the year prior to being interviewed and therefore still had fresh recollections of their on-site experience. As Hudson and Ozanne (1988) argue that consumers as individuals and in groups interpret the same phenomena differently, the intention was to collect a representative range of domestic visitors traveling individually and in groups who had visited Alisadr cave at any point in the year prior to the interview date (Spring 2019).

Overall, 22 participants, aged 21-65, were interviewed (**Table 1**). Each lasted around 45-minutes, was audio-recorded, and transcribed. Guided by thematic analysis, the interviews started with open-ended questions such as ‘how was your visit to Alisadr cave?’ This led to in-depth conversations which allowed visitors to share interesting stories about their experience, framed by specific examples. Next, to systematically search for similarities and differences, the research team went back-and-forth between transcribed interviews (Gannon et al., 2019). Doing so, the researchers established whether the findings were consistent with literature. While several themes emerged from this interactive process, the team nevertheless conducted side-by-side analysis of each question to develop a link between braggart WoM and its potential antecedents. Finally, to enhance the validity of the data and themes, the coding structure and transcripts were shared between the researchers and other academics fluent in both English and Farsi.

<<TABLE1>>

3.3 Study 2: Quantitative phase

The self-administrated questionnaire was conducted at the Alisadr cave exit in Summer 2019, targeting domestic visitors through convenience sampling. It took around 10 minutes to complete each questionnaire, and a small gift was provided to encourage participation. The questionnaire was piloted with 50 respondents to ensure content validity. These respondents were not included in the final survey. Following the pilot, some items were modified to simplify language, avoid language confusion, and ensure no misinterpretation of statements; the feedback collected at this stage was therefore crucial in the development of a robust survey instrument. In total, 850 fully completed questionnaires were returned. **Table 2** presents demographic information from this phase.

<<TABLE2>>

As with all self-reported samples, there is a risk of Common Method Bias (CMB). Podsakoff et al. (2003, p.879) define CMB as “variance that is attributable to the measurement method rather than to the constructs the measures represent”. In other words, the variance is due to how the data was collected rather than to actual and true relationships between constructs and items. To minimize this, several steps were followed. *First*, to minimize social desirability bias, participants were informed that answers would remain anonymous. *Second*, dependent

and independent scales were placed in different parts of the questionnaire to reduce consistency and location of items issues. *Third*, previously validated measures were used to reduce item ambiguity. *Fourth*, Harman's single-factor test was applied to evaluate CMB using exploratory factor analysis (EFA); eight factors held Eigenvalues >1 , demonstrating 68.712% of total variance with the first factor elucidating only 33% of total variance (Podsakoff et al., 2003). *Finally*, the unmeasured method approach was employed (Liang et al., 2007). The average variance of measurement scale items and method factor were calculated. The average variance explained by indicators was 64%, whereas average method-based variance was 1.6% (40:1). CMB was not a concern.

3.3.1 Measurement scales

Visitors indicated their level of agreement or disagreement with each statement using a 7-point Likert-type scale (1='strongly disagree'; 7='strongly agree'). Leisure involvement was operationalized as a second-order scale (Henseler, Ringle, & Sarstedt, 2016) comprising three sub-dimensions: attraction (3-items), centrality (3-items), self-expression (3-items); adapted from Forgas-Coll et al. (2017) and Chang and Gibson (2011). To measure higher-order 'perceptions of value co-creation', four underlying first-order scales were borrowed from González-Mansilla et al. (2019): access (3-items), dialogue (3-items), risk (3-items), and transparency (3-items). To measure higher-order perceived experience value, six underlying first-order scales were adapted from Prebensen and Xie (2017): quality value (4-items), economic value (4-items), novelty value (5-items), emotional value (4-items), social value (3-items), and knowledge value (3-items). Four items measuring customer satisfaction were adapted from Prebensen and Xie (2017) and five items measuring braggart WoM were adapted from Pelletier and Collier (2018).

4. Findings and discussion

4.1 Study 1: Qualitative analysis

Consistent with extant research (Campos et al., 2018; O'Cass & Sok, 2015), co-creation of value emerges at Alisadr; respondents highlighted the importance of interacting with tour operator representatives at the caves. For example, P17 (male, 48) noted:

There were places and people that we can talk about issues we have there. It wasn't big, but there were people to talk about it...we got a lot of good information and offers about public transportation and how to go to Alisadr which was great.

The stress on co-creation's role in providing access to information was also visible in comments from P2 (female, 51), who stated:

We got a lot of information about the site when we visited Alisadr. We could modify our tour when we were there.

In both examples, responses emphasize the importance of information provided by local tourism operators and the ability to actively design visits to the cave in collaboration with these individuals. This shows how this stimulates tourism value in co-created environments (Binkhorst & Den Dekker, 2009). Several visitors also highlighted their previous leisure involvement with heritage sites, further supporting extant scholarship demonstrating the influence that past experiences can have on present tourism activities (Mathis et al., 2016) and the role of engagement in stimulating co-creation experiences (O'Cass & Sok, 2015). The influence of previous leisure involvement is evident in P12's (female, 25) response:

I like visiting historical and cultural heritage sites [but] I particularly like natural heritage sites like Alisadr or Kandovan. They're different as you can have an outdoor experience and some cultural experiences too. It helps me relax.

The preference for heritage sites has, in the case of P12, played a role in the selection of Alisadr as a destination. A similar situation is observed with P8 (male, 51):

We're a big team of people who like travel to fun heritage and cultural sites. We enjoy doing this. We talk about our experience during the visit. We take notes and share them later. It's serious business for us. But of course, we enjoy our experience...Alisadr is a great place. It's so relaxing!

Respondent P8's comments reinforce the influence that leisure involvement holds over co-creation activities, particularly those with an educational element (Calver & Page, 2013). Yet, previous leisure involvement is not the only influence on repeat tourism experiences as perceived experience value plays a similar role (González-Mansilla et al., 2019). Echoing Prebensen et al.'s (2013) definition of this concept, P14's (male, 32) statements exhibit positive perceived experience value:

The price for the tour is decent. It's well-organized. I personally learned a lot of things and satisfied my curiosity about Alisadr.

In the case of P20 (male, 47), active engagement with other tourists during his cave experience resulted in the development of positive experience value, echoing Pelletier and Collier (2018) and Antón et al. (2018):

It's a unique and exiting experience. It was very different. I enjoyed socializing with others there. I could tell them about my previous natural heritage experiences.

Here, the interplay between previous leisure involvement and perceptions of experience quality is clear, similar to Altunel & Erkhurt (2015) and Forgas-Coll et al. (2017). However, experience quality also shapes customer satisfaction (Oviedo-García et al., 2019), and customer satisfaction in turn can impact WoM (Forgas-Coll et al., 2017). Both are apparent in the comments made by P15 (male, 41):

I was very satisfied with my visit. I definitely recommend Alisadr. It's a wonderful place. I felt good about my experience there and I shared my photos and videos with friends and family. I think they love listening to me or maybe they just pretend, but you know what...I will tell them anyway!

Accordingly, this respondent expresses a visible desire to engage in braggart WoM, particularly in the desire to show off their experience to friends and family (De Angelis et al., 2012). The qualitative findings presented herein support the influence of previous leisure involvement, perception of value co-creation, and perceived experience value on tourist satisfaction and braggart WoM.

4.2 Study 2: Quantitative analysis

Partial Least Squares structural equation modelling (PLS-SEM) was used to test the conceptual model for several reasons. *First*, Wetzels, Odekerken-Schröder, and Van Oppen (2009, p.190) argue that “model complexity does not pose as severe a restriction to PLS path-modelling as to covariance-based SEM, since PLS path-modelling at any moment only estimates a subset of parameters”. *Second*, it is suitable for formative, reflective, and second-order models). *Third*,

PLS-SEM is a nonparametric statistical method based on bootstrapping procedure which is different from maximum likelihood (ML)-based CB-SEM (Hair et al., 2017). as its “statistical properties provide very robust model estimations with data that have normal as well as extremely non-normal (i.e., skewness and/or kurtosis) distributional properties” (Hair et al., 2017, p.22). Tests of Skewness and Kurtosis were conducted, and results indicate that the assumption of normality was violated (acceptable range ± 3) (Hair et al., 2010); SmartPLS3.2.7 (5,000 resamples) was used for analysis.

4.2.1 Measurement model

Following a two-stage approach (Becker et al., 2012), leisure involvement, perceptions of value co-creation, and perceived experience value were established as second-order composite constructs. The measurement model was analysed by assessing first-order reflective construct reliability, convergent validity, and discriminant validity (Hair et al. 2017; Hair et al. 2010). **Table 3** shows indicator reliability, construct reliability, and convergent validity of each scale using Cronbach's Alpha (α), composite reliability (CR), Dijkstra-Henseler's rho (ρ_A), and average variance extracted (AVE^a). To establish reliability and convergent validity, outer loadings must be >0.7 , $\alpha >0.7$, $\rho_A >0.7$, CR >0.7 , and $AVE^a >0.5$ (Hair et al. 2017). Two approaches tested discriminant validity. *First*, Fornell and Larcker's (1981) criterion was employed, which necessitates a scale's AVE^a is greater than the square of its greatest correlation with any scale (**Table 4**). The correlations amongst scales were below the 0.70 threshold. *Second*, Henseler et al.'s (2015) heterotrait-monotrait ratio of correlations (HTMT) approach was applied. If HTMT values are lower than the recommended threshold (0.85), discriminant validity must be established between scales. Construct HTMT values ranged from 0.311-0.702. All supported the reliability and validity of first-order constructs. *Finally*, multicollinearity was assessed using variance inflation factors (VIF) for the items comprising second-order composite constructs and the significance of outer weights (**Table 3**). Findings are acceptable as VIFs for all items are <5 (Hair et al., 2017). The percentage of variance of indicator explained by the latent variable ($AVE^b >0.5$) or weights (>0.5) were acceptable (**Table 3**) (Hair et al., 2017; Prayag et al., 2020; Rasoolimanesh et al., 2019). The results indicate significant outer loadings for all items of the second-order composite construct. Thus, the measurement models are adequate.

<<TABLE3>>

<<TABLE4>>

4.2.2 Structural model and key findings

Before assessing hypotheses, effect sizes (f^2), predictive relevance (Q^2) and Standardized Root Mean Square Residuals (SRMR) were calculated (Hair et al. 2010; Henseler et al. 2015). Cohen's effect size (f^2) signifies 0.01 for small, 0.06 for medium, and 0.14 for large effects within SEM. The results indicate f^2 effect sizes for significant direct paths. Most direct paths have a medium and large effect size. Following the blindfolding procedure, Q^2 specifies how well the data can be reassembled empirically applying the model and the PLS-SEM parameters. All Q^2 values are >0 ; showing suitable predictive relevance. The SRMR value for the model was 0.068; below the recommended value (0.08) (Henseler et al. 2015).

R^2 values are greater than the 0.1 recommendation (Hair et al., 2017). The model explains 28% of perceived experience value, 41% of customer satisfaction, and 48% of braggart WoM; model R^2 s indicate satisfactory explanatory power. Perception of value co-creation was found to have a positive direct link with perceived experience value ($\beta=0.37$, $t=8.37$; $f^2=0.26$), braggart WoM ($\beta=0.38$, $t=12.01$; $f^2=0.30$), and customer satisfaction ($\beta=0.38$, $t=12.01$; $f^2=0.11$). Leisure involvement had a direct positive relationship with perceived experience value ($\beta=0.38$, $t=9.59$; $f^2=0.18$), braggart WoM ($\beta=0.43$, $t=9.57$; $f^2=0.27$), and customer satisfaction ($\beta=0.41$, $t=17.03$; $f^2=0.05$). Perceived experience value was found to have a positive direct association with customer satisfaction ($\beta=0.36$, $t=12.27$; $f^2=0.10$) and braggart WoM ($\beta=0.40$, $t=9.50$; $f^2=0.12$). Finally, customer satisfaction had a positive relationship with braggart WoM ($\beta=0.35$, $t=11.74$; $f^2=0.13$).

4.2.3 Indirect effects

Potential mediation effects were tested. The product coefficients approach was used to assess the significance of indirect effects using bias-corrected bootstrap confidence intervals (CIs). A 95% confidence interval (CI) of parameter estimates based on 5,000 resamples was used. Findings demonstrate the indirect effect of perception of value co-creation on braggart WoM through customer satisfaction (indirect effect=0.18; $t=8.12$; $p<0.001$; CI=[0.12, 0.23]). As the direct effect was significant, customer satisfaction mediates the impact of perception of value co-creation on braggart WoM. The results also indicated the indirect effect of leisure involvement on customer satisfaction via perceived experience value (indirect effect=0.26;

$t=12.03$; $p<0.001$; CI=[0.18, 0.31]). As the direct effect was significant, perceived experience value mediates the impact of leisure involvement on customer satisfaction. Finally, findings suggest the indirect effect of perception of value co-creation on customer satisfaction via perceived experience value (indirect effect=0.32; $t=15.89$; $p<0.001$; CI=[0.27, 0.39]). As the direct effect was again significant, perceived experience value mediates the impact of perception of value co-creation on customer satisfaction.

5. Conclusions and implications

Using mixed methods, this paper examined visitors' co-creation of experiences within the context of natural heritage consumption. The qualitative data demonstrated that leisure involvement, perceptions of value co-creation, and perceived experience value shape tourist satisfaction and braggart WoM at the natural heritage site of Alisadr, Iran. This supports Taheri et al. (2017, p.3065), who suggest "customers assess the value creation through their views of what is given, how it is participated and what is expected". This also reflects the suggestion that co-created value can be shaped at the point of exchange between customer and service provider (O'Cass & Sok 2015). From the quantitative data, this work focused on the analysis of value co-creation in the context of a natural heritage site (**Fig.1**). Based on the mixed-methods findings, all hypothesized direct paths were supported, and three indirect effects were significant. This is consistent with previous works illustrating similar interactions between value co-creation and perceived experience value (Prebensen & Xie, 2017; Sugathan & Ranjan, 2019) and customer satisfaction (Mathis et al. 2016; Zhang et al. 2019), as well as between leisure involvement and customer satisfaction (Forgas-Coll et al. 2017) and perceived experience value (Chen & Chen 2010). The findings thus support literature highlighting the impact of perceived experience value on customer satisfaction (Oviedo-García et al., 2019; Prebensen & Xie, 2017).

This study builds upon extant literature investigating value co-creation within a relatively unexplored context: natural heritage tourism. While previous works illustrate the connection between tourism co-creation and leisure involvement (Antón et al., 2018; Mathis et al., 2016), this study's most significant theoretical contribution is the emphasis of the interplay between these aspects and customer satisfaction, perceived experience value, and braggart WoM. Greater understanding of these interactions is essential given extant emphasis on the importance of co-creation within heritage consumption, where both value co-creation experiences and previous leisure involvement appear to have strong influence over tourists (Calver & Page, 2013). Theoretical advancement is also derived from the inclusion of braggart

WoM, which has yet to be discussed in relation to value co-creation. Based on the results, the development of co-creation experiences at natural heritage sites and visitors' previous leisure experiences can result in positive perceptions of experience value, higher levels of customer satisfaction, and eventual engagement in positive braggart WoM. Thus, not only does co-creation matter, but it should be considered an important element of natural heritage tourism site development and planning.

Consequently, natural heritage site managers must ensure that they develop well-crafted and adaptable co-creation experiences for tourists in order to provide experience value (Antón et al., 2018), with a focus on knowledge-enhancing activities due to the specificities of the heritage tourism market (Calver & Page, 2013). Additionally, given the propensity of heritage tourists to repeatedly select heritage tourism destinations, it is important for co-creation experiences on site to develop active and engaging environments that draw upon these knowledge bases, which may increase braggart WoM, laying the groundwork for long-term WoM marketing to key demographics (Pelletier & Collier, 2018). This requires concerted planning both in terms of visitation numbers as well as in targeting the appropriate activities to specific market segments. By co-creating value at natural heritage sites, management will not only enhance perceptions of on-site experiences but also lay the foundations for potential repeat visitors.

This study is not without limitations. First, it focused on domestic visitors, whose expectations could prove different to international tourists. Future research should also include international visitors in order to ascertain whether there are any differences between groups. Additionally, this study is limited in that it includes only one natural heritage site in one specific socio-cultural context. Future research should seek to replicate these findings within other natural heritage sites to assess their applicability across a broader spectrum of the sector. It would be apposite to test the model across various cultural contexts to assess if different socio-cultural groups exhibit variations in their understanding of what constitutes a heritage, either natural or cultural, experience or, indeed, what they perceive as co-creation in the context of tourism activities. Future studies should determine if the interactions in the model are mediated by whether tourists were in groups or visited alone, given the emphasis on social interaction in co-creation. Moreover, to explore perspectives beyond the customers' experience, additional data could be collected from alternate sources (e.g., tour guides, service providers) to extend the results. Additionally, the convenience sampling technique employed in the study is limited, and future research should apply probability sampling techniques (e.g., stratified sampling). Also, the role of technology on experience co-creation is gradually permitting tourists to access

information about places at any time. Future research should investigate whether this changes motivations and levels of prior knowledge in order to understand how these differences impact the co-creation process. Finally, we suggest that a holistic understanding of the constructs and themes related to co-creation of value would require a longitudinal study using a multimodal research design (including qualitative and quantitative methods).

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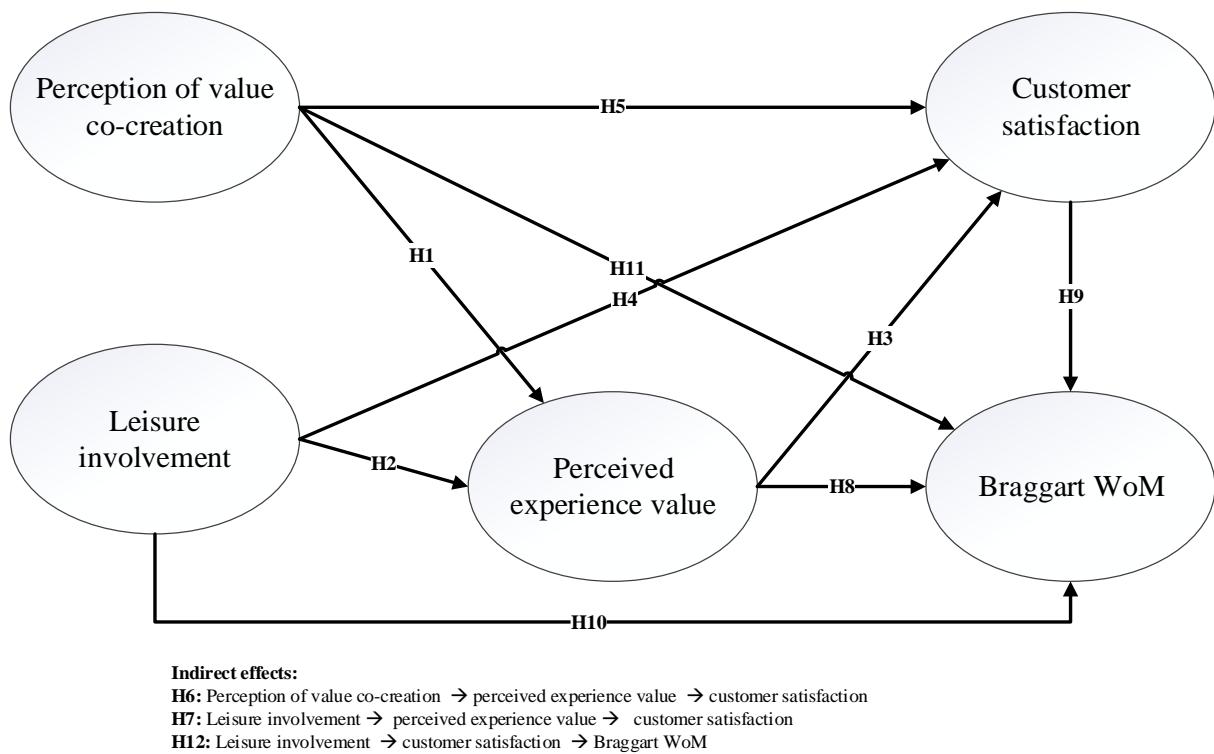


Figure1. Conceptual model

Figure1 Alt Text: Model showing the hypothesised direct and indirect effects of leisure involvement, perception of value co-creation, perceived experience value, braggart word of mouth, and customer satisfaction.

Table1.Interviewee-profiles

Name ^a	Age	Gender	Marital status	Occupation	Format
P1	40	Male	Divorced	Salesman	Individual
P2	51	Female	Married	Doctor	Group
P3	34	Male	Married	Technician	Individual
P4	34	Female	Single	Security	Individual
P5	41	Female	Single	Teacher	Individual
P6	21	Male	Married	Retail	Individual
P7	28	Female	Single	Librarian	Group
P8	51	Male	Married	Teacher	Group
P9	32	Female	Single	Student	Individual
P10	65	Male	Divorced	Nurse	Individual
P11	34	Female	Single	Marketer	Individual
P12	25	Female	Single	Nurse	Group
P13	44	Male	Married	Student	Individual
P14	32	Male	Married	Doctor	Individual
P15	41	Male	Single	Office	Group
P16	53	Female	Divorce	Marketer	Individual
P17	48	Male	Engaged	Professor	Individual
P18	21	Male	Single	Student	Group
P19	38	Male	Married	Lecturer	Individual
P20	47	Male	Divorced	Security	Individual
P21	61	Male	Married	Policeman	Individual
P22	58	Male	Divorced	Retail	Group

^aAnonymized

Table 2. Socio-demographic information (quantitative study)

Socio-demographic indicators	Percentage
Gender	
Male	58.5
Female	41.5
Age	
18-25years	8
26-35years	28
36-45years	30
46-55years	18.2
56years+	15.8
Education	
Basic/secondary school	14
High-school degree	21.5
College degree	32.5
Undergraduate	20
Postgraduate/PhD studies	12
Visiting group	
Alone	33
Friends/family	67

Table 3. Measurement model.

Constructs/Underlying items	<i>t</i> -value	Standard loading
Step1: Results: assessment of measurement model for first-order constructs		
Attraction-Leisure involvement (CR=0.81;ρA=0.82;α=0.78;AVE ^a =0.55)		
ALI1.Visiting cultural/historical places are important to me.	13.11	0.71
ALI2.Visiting cultural/historical places is one thing I enjoy doing.	26.57	0.81
ALI3.Visiting cultural/historical places allows me to relax from my daily activities.	7.88	0.71
Centrality-Leisure involvement (CR=0.82;ρA=0.83;α=0.80;AVE ^a =0.56)		
CLI1.Visiting cultural/historical places occupies an important part of my leisure time.	30.01	0.80
CLI2.I enjoy talking about cultural/historical places with acquaintances.	12.11	0.78
CLI3.Many of my acquaintances like visiting cultural/historical places.	16.88	0.70
Self-expression-Leisure involvement (CR=0.78;ρA=0.77;α=0.78;AVE ^a =0.51)		
SLI1.My cultural/history-related activities explain who am I.	23.67	0.71
SLI2.When I visit cultural/historical places I can really be myself.	16.45	0.73
SLI3.You can tell a lot about a person by seeing them visiting a cultural/historical place.	11.47	0.72
Access-Perception of value co creation (CR=0.81;ρA=0.82;α=0.80;AVE ^a =0.60)		
APVC1.Site communicates with and listens to visitors to improve its service.	11.89	0.77
APVC2.Site uses multiple communication channels (employees, website, social networks, etc...) to share/exchange ideas with guests about the service.	13.52	0.81
APVC3.Service provider facilitates communication of ideas and suggestions about service.	15.11	0.83
Dialogue-Perception of value co-creation (CR=0.72;ρA=0.75;α=0.72;AVE ^a =0.52)		
DPVC1.Site allows visitors to personalise the range of services they wish to receive.	13.57	0.72
DPVC2.Visitors have numerous service options to adapt them to their needs.	23.02	0.71
DPVC3.It's easy to receive information about service when, where and the way guests wish.	10.11	0.73
Risk-Perception of value co-creation (CR=0.77;ρA=0.75;α=0.78;AVE ^a =0.55)		
RPVC1.Site offers comprehensible information that allows the advantages and disadvantages of the services to be assessed.	23.35	0.80
RPVC2.Site offers possibilities to present complaints regarding any problems that arises during service.	11.07	0.73
RPVC3.Site urges visitors to familiarise themselves with possible risks involved in using services (health & safety signs)	12.33	0.72
Transparency-Perception of value co-creation (CR=0.74;ρA=0.75;α=0.78;AVE ^a =0.54)		
TPVC1.Site provides transparent information to assess and improve the service offered.	37.08	0.72
TPVC2.Visitors have access to all information that may be of use in improving service.	21.23	0.84
TPVC3.Site offers public/transparent information regarding prices associated with various services.	17.56	0.71

Quality value-Perceived experience value(CR=0.81;ρA=0.80;α=0.80;AVE^a=0.56)

QVPC1.This experience has a consistent level of quality.	23.46	0.75
QVPC2.This experience is well -formed.	20.01	0.79
QVPC3.This experience has an acceptable standard of quality.	16.45	0.74
QVPC4.This experience is well-organized.	11.45	0.76

Economic value-Perceived experience value(CR=0.73;ρA=0.78;α=0.75;AVE^a=0.53)

EVPV1.This experience is correctly priced.	23.46	0.72
EVPV2.The prices for additional services are acceptable.	11.76	0.70
EVPV3.This experience represents “value” for money.	23.01	0.73
EVPV4.The price for this experience is reasonable.	14.37	0.71

Novelty value-Perceived experience value(CR=0.78;ρA=0.79;α=0.80;AVE^a=0.55)

NVPE1.This experience is unique.	12.58	0.73
NVPE2.This is once-in-a-lifetime experience.	8.67	0.71
NVPE3.This experience is educational.	16.59	0.74
NVPE4.This experience satisfies my curiosity.	11.77	0.72
NVPE5.This experience provides an authentic/genuine experience.	21.69	0.88

Emotional value-Perceived experience**value(CR=0.74;ρA=0.78;α=0.71;AVE^a=0.54)**

EVPE1.This experience makes me happy.	16.74	0.72
EVPE2.This experience is stimulating.	20.07	0.76
EVPE3.This experience is exciting.	13.76	0.72
EVPE4.This experience gives me a feeling of well-being.	17.43	0.75

Social value-Perceived experience value(CR=0.88;ρA=0.83;α=0.82;AVE^a=0.55)

SVPE1.Participating in this experience enables me to impress others.	21.87	0.78
SVPE2.Participating in this experience makes me feel more socially accepted.	15.79	0.81
SVPE3.Participating in this experience enables me to create a good impression.	16.86	0.84

Knowledge value-Perceived experience**value(CR=0.80;ρA=0.81;α=0.84;AVE^a=0.62)**

KVPE1.Learning is key to valuable experiences in the future.	15.87	0.82
KVPE2.Learning is an investment, not an expense.	12.87	0.83
KVPE3.I’ve participated in something meaningful here.	16.86	0.79

Customer satisfaction(CR=0.77;ρA=0.74;α=0.72;AVE^a=0.56)

CS1.It’s been a good experience	18.65	0.75
CS2.I will remember this experience.	12.85	0.72
CS3.I will recommend this experience to others.	16.74	0.75
CS4.I enjoy discussing this type of place with my friends.	10.75	0.72

Braggart WoM(CR=0.81;ρA=0.80;α=0.78;AVE^a=0.57)

BW1.Talking about this experience makes me feel good about myself.	21.84	0.77
BW2.Talking about this experience boosts my self-esteem.	14.86	0.81
BW3.Talking about this experience makes me feel the centre of attention.	16.87	0.77

BW4.Talking about this experience makes me feel a sense of pride.	11.86	0.71
BW5.Talking about this experience makes me feel important.	8.65	0.75

Step 2: Results:assessment of measurement model after generating second-order construct

Leisure involvement (AVE^b=0.58;VIF=1.39)

Attraction(CW=0.90)	0.78
Centrality(CW=0.78)	0.77
Self-expression(CW=0.92)	0.74

Perception of value co-creation (AVE^b=0.63;VIF=1.79)

Access(CW=0.84)	0.81
Dialogue(CW=0.81)	0.75
Risk(CW=0.77)	0.86
Transparency (CW=0.86)	0.77

Perceived experience value (AVE^b=0.54;VIF=2.75)

Quality value(CW=0.75)	0.76
Economic value(CW=0.80)	0.70
Emotional value(CW=0.78)	0.71
Social value(CW=0.86)	0.70
Knowledge value(CW=0.81)	0.72

Note:Significant...*t*-value>1.96*p*-value<0.05;*t*-value>2.57*p*-value<0.01;*t*-value>3.29*p*-value<0.001.

Table 4. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
(1)Leisure involvement	N/A																	
(2)Attraction	0.33	0.74																
(3)Centrality	0.36	0.37	0.74															
(4)Self-expression	0.41	0.25	0.55	0.71														
(5)Access	0.11	0.19	0.43	0.32	0.77													
(6)Dialogue	0.28	0.17	0.42	0.23	0.37	0.72												
(7)Perception of value co-creation	0.46	0.20	0.28	0.23	0.41	0.51	N/A											
(8)Risk	0.25	0.23	0.55	0.31	0.43	0.42	0.31	0.74										
(9)Transparency	0.26	0.52	0.49	0.27	0.52	0.15	0.27	0.42	0.73									
(10)Quality value	0.33	0.28	0.33	0.44	0.12	0.33	0.14	0.31	0.31	0.74								
(11)Emotional value	0.27	0.16	0.41	0.14	0.17	0.26	0.27	0.23	0.46	0.14	0.73							
(12)Economic value	0.31	0.36	0.21	0.24	0.24	0.11	0.32	0.25	0.53	0.25	0.26	0.72						
(13)Perceived experience value	0.17	0.27	0.27	0.14	0.28	0.36	0.52	0.29	0.26	0.22	0.17	0.38	N/A					
(14)Social value	0.36	0.17	0.26	0.34	0.18	0.21	0.43	0.13	0.19	0.31	0.11	0.31	0.22	0.74				
(15)Novelty value	0.34	0.42	0.42	0.27	0.23	0.36	0.26	0.19	0.25	0.34	0.36	0.42	0.34	0.45	0.74			
(16)Knowledge value	0.51	0.41	0.37	0.14	0.45	0.20	0.17	0.24	0.23	0.27	0.31	0.44	0.19	0.23	0.16	0.78		
(17)Customer satisfaction	0.13	0.17	0.27	0.19	0.32	0.43	0.41	0.28	0.22	0.52	0.28	0.28	0.24	0.45	0.14	0.28	0.74	
(18)Braggart WoM	0.26	0.11	0.36	0.23	0.37	0.09	0.43	0.32	0.21	0.44	0.22	0.21	0.22	0.11	0.22	0.41	0.75	

Note:Square root AVE (**diagonal**);Square root AVE value for perceived experience value, perception value co-creation and leisure involvement constructs are absent as they were operationalized as higher-order models, with AVEs only relevant to dimensions.

Appendix1.Interview protocol.

1. How do you feel about visiting natural and cultural heritage sites? Please explain with an example.
2. How was your visit to Alisadr?
3. What did you do when in Alisadr?
4. Have you received good level of information about Alisadr before going there? Please explain with an example.
5. Have you received good level of information about Alisadr while you were there? Please explain with an example.
6. What did you do while you were in Alisadr? Please explain with an example.
7. Are you happy with the entrance fee and quality of activities when you were there? Please explain with an example.
8. Are you satisfied with the overall experience? Please explain with an example.
9. Would you recommend/talk about Alisadr to others? Why?