Destination image of Chitwan National Park, Nepal: Insights from a content analysis of online photographs

Pragya Bhatt [*], Catherine Marina Pickering

Center for Planetary Health and Food Security, School of Environment and Sciences, Griffith University, Gold Coast Campus, Parklands Drive, Southport, QLD, 4222, Australia

ABSTRACT

There are millions of publicly available photographs posted by people visiting protected areas on social media, but can they enhance our understanding of the preferences of nature-based tourists, and if so, how are such areas marketed? To explore the uses of this still novel source of data, we compared the content of photographs posted by tourists (perceived image(s)) with those posted by tourism organizations online (projected destination image (s)) using Chitwan National Park in Nepal as a case study. This involved comparing the content of 645 photographs posted online by government and tourism companies with 1214 photographs taken by tourists in the Park and posted to the social media platform Flickr. The findings highlighted similarities including the popularity of wildlife and landscapes in photographs, but also discordances in how cultural attributes were more popular in photographs posted by tourists than those promoting tourism. When the geolocations of Flickr photographs were mapped across the Park, spatial and temporal hotspots were identified relating to specific content, while the popularity of photographs with others on Flickr indicated that potential future tourists may also value wildlife and culture in the Park. The findings highlight how destination marketing online could better match what tourists shared about the Park and identify what they valued where and when in the Park. It also illustrates how other parks where nature-based tourism is economically, socially, and ecologically valuable, but resources limited, could harness free and readily available social media content to improve destination marketing and management, despite some recognized limitations with social media data.

Management implications: The content of social media photographs and metadata about when and where images were taken can provide useful insights into tourist preferences. For Chitwan National Park, Nepal there were congruence in some aspects of projected (online images provided by tourism organisations) and perceived destination images from social media. This case study highlights how nature-based tourism destinations in developing countries could harness social media as a useful, low cost and time-effective way to obtain additional information about tourists. For Chitwan the results indicate how park authorities should continue to focus on wildlife and landscapes in marketing but also emphasize cultural attributes.

Management implications

The content of social media photographs and metadata about when and where images were taken can provide useful insights into tourist preferences. For Chitwan National Park, Nepal there were congruence in some aspects of projected (online images provided by tourism organisations) and perceived destination images from social media. This case study highlights how nature-based tourism destinations in developing countries could harness social media as a useful, low cost and time-effective way to obtain additional information about tourists. For Chitwan the results indicate how park authorities should continue to focus on wildlife and landscapes in marketing but also emphasize cultural attributes.

1. Introduction

Nature-based tourism and outdoor recreation are important globally, contributing to physical and mental well-being (Leung et al., 2018), generating revenue, creating employment, and contributing to Gross Domestic Product also in many developing countries (Loss, 2019;

* Corresponding author.
  E-mail addresses: pragya.bhatt@griffithuni.edu.au, pragyabhatt@outlook.com (P. Bhatt), c.pickering@griffith.edu.au (C.M. Pickering).

UNWTO 2020; Spenceley et al., 2021). It can also foster cultural understanding, provide educational opportunities, and since it is focused on nature, also enhance support for nature conservation including in national parks (Balmford et al., 2015; Das & Hussain, 2016; Leung et al., 2018; Job et al., 2021). Globally billions of tourists visit national parks each year (Balmford et al., 2015), and in many developing countries these nature-based tourists provide critical income and support for these parks (Job & Paesler, 2013; Snyman & Bricker, 2019). As a result, there can be considerable competition among those marketing national parks to nature-based tourists (Chi & Qu, 2008; Jenkins, 2003; Kladou & Mavragani, 2015; Kumar & Dhir, 2020).

Tourism marketing often focuses on ways to create unique and attractive image(s) of destinations in the minds of potential tourists (Ji & Wall, 2014; Kladou & Mavragani, 2015; Chan & Zhang, 2018). These destination images are important elements in tourism marketing and management (Molina et al., 2010; Çoban, 2012; Xie & Lee, 2013; Wang et al., 2020). They can play a crucial role in the success of destinations by influencing tourists' choice of where to visit (Tasci & Gartner, 2007; Kim & Stepchenkova, 2015), as well as their behaviour during the visit (Jenkins, 2003; Chi & Qu, 2008; Zhang et al., 2019). A close match between the image projected by tourism organizations, and what tourists see when they visit contributes to visitor satisfaction, positive reviews online and word of mouth as well as repeat visitation (Tasci & Gartner, 2007; Kim & Stepchenkova, 2015). Therefore, a key aspect of tourism management is to compare how well projected destination image(s) used in marketing match the one(s) created and shared by tourists when they visit, that is the perceived image, with photographs of destinations by marketing organizations and tourists increasingly shared online (Stepchenkova & Zhan, 2013; Marine-Roig & Ferrer-Rosell, 2018).

Destination image is "the sum of beliefs, ideas, and impressions that a person has of a destination" (Crompton, 1979, p. 18). This mental concept develops from the interaction of three interrelated components: cognitive (factual knowledge about destination attributes such as biodiversity, landscapes, culture), affective (people's emotional response to such attributes prior to, and/or during visitation) and conative (action component resulting from the interplay of cognitive and affective components and reflected thorough behaviour during the actual visit) (Gartner, 1993). Such image formation is influenced by sources of information such as induced, autonomous, and organic (Gunn, 1988; Marine-Roig & Ferrer-Rosell, 2018). Induced sources of information comprise those produced by destination marketing organizations that promote a destination and attract tourists (Beerli and Martin 2004; Tasci & Gartner, 2007). This could be in the form of brochures, postcards, guidebooks, videos, and websites using text, images, and videos to promote the destination (Stepchenkova & Zhan, 2013). Autonomous sources influencing destination images comprise documentaries, newspapers, brochures, and websites as well as travel magazines that are perceived as reliable, independent sources of information by tourists (Marine-Roig & Ferrer-Rosell, 2018). Organic sources include non-commercial information from conversations with family, friends, and acquaintances and increasingly, user generated content on social media (Marine-Roig & Ferrer-Rosell, 2018; Bigne et al., 2021). These sources form the projected image of a destination and entice tourists to choose specific destinations (Bramwell & Rawding, 1996; Herath et al., 2020). Interactions between these projected images and tourists' characteristics and own personal experience form tourists' perceived image of the destination (Beerli and Martin 2004; Marine-Roig & Ferrer-Rosell, 2018).

Projected and perceived images are mutually inclusive and constitute aspects of the "hermeneutic circle of representation", a key concept in tourism marketing, as postulated by Urry in 1990 (Urry, 1990; Bordelon & Ferreira, 2017). First, perceptions of destinations based on projected images create the first half of the circle (Stepchenkova & Zhan, 2013; Mak, 2017). During their visit tourists often seek to create/replicate the projected image incorporating aspects within their own photographs, texts, and videos, which they may then share with others, completing the circle (Jenkins, 2003; Stepchenkova & Zhan, 2013; Gillet et al., 2013; Mak, 2017; Balomenou & Garrod, 2019). Tourists' images of destinations are increasingly shared online including in personal blogs, travel platforms and social media through personal reviews, photographs, and videos (Stepchenkova & Zhan, 2013; Zhao et al., 2018) where they can have greater effect on destination choices by others than information provided by marketing organizations (Bednar, 2012; Leung et al., 2013; Költringer & Dickinger, 2015; Marine-Roig & Ferrer-Rosell, 2018; Garay, 2019). It is therefore important to examine projected images produced by marketing agencies (Picazo and Moreno-Gill 2017) and tourists' (perceived) images (Stepchenkova & Zhan, 2013) together with any discordance(s) between them that may affect the success of destination marketing and/or risk disappointment when tourists visit (Ashworth & Goodall, 1988; Költringer & Dickinger, 2015; Marine-Roig & Ferrer-Rosell, 2018).

Reflecting its ongoing importance to the industry, academic interest in destination image endures (Tsiotsou & Ratten, 2010; Ávila-Robinson & Wakabayashi, 2018) including comparing projected and perceived images (Gartner, 1993; Pike, 2007; Gertner, 2011). Studies have assessed a range of promotional materials, such as brochures and postcards produced by tourism organizations, when examining projected images (e.g., Garrod, 2009; Molina et al., 2010; Ji & Wall, 2014), as well as surveying tourists to examine perceived images (e.g., Grosspietsch, 2006; Ji & Wall, 2014). With the rapid increase in the popularity of social media, destination marketers and tourists are increasingly sharing information and experiences in the form of photographs, videos, and texts online (Bordelon & Ferreira, 2017; Mak, 2017; Zhao et al., 2018; Herath et al., 2020), and such user created content is becoming an important focus of research including in destination marketing and management (Kladou & Mavragani, 2015; Ávila-Robinson & Wakabayashi, 2018). Some researchers have started to assess online promotional materials and user generated social media content to assess and compare projected and perceived destination images (e.g. Stepchenkova & Zhan, 2013; Chi et al., 2015; Mak, 2017; Marine-Roig & Ferrer-Rosell, 2018; PaüliAgustí, 2021) as well as analyzing the content of photographs (Caton & Santos, 2008; Herath et al., 2020; Jenkins, 1999; Picazo & Moreno-Gil, 2017).

Photographs are essential and powerful elements in tourism marketing (Balomenou & Garrod, 2019). Travel brochures, guidebooks, television commercials, education materials and webpages all use photographs to disseminate destination information (Jenkins, 2003; Garrod, 2009; Mull & Lee, 2014). They are used by marketers to communicate information and shape destination images and by tourists to share their experiences as reflected in clichés such as "a picture is worth thousand words" (Mackay & Fesenmaier, 1997; Jenkins, 2003; Caton & Santos, 2008; Herath et al., 2020). Recently, photograph sharing social media sites have gained popularity among tourists who share their travel experiences and seek information about new destinations (Tas, 2021) and among researchers as a source of data about destination images (Stepchenkova & Zhan, 2013; Galí & Donaire, 2015; Bordelon & Ferreira, 2017) and tourists' preferences, experiences and activities in different destinations such as national parks (Richards & Friess, 2015; Hausmann et al., 2018; Rossi et al., 2019; Moreno-Llorca et al., 2020; Pickering et al., 2020; Sinclair et al., 2020; Wan et al., 2021). For example, Stepchenkova and Zhan (2013) compared images of Peru projected by Destination Marketing Organizations with those shared by tourists on Flickr. They found similarities in the content related to nature and landscapes, archeological sites and people, but projected images tended to focus more on traditional culture and arts while tourists seemed interested in Peruvians everyday life, domestic animals and plants. Hausmann et al. (2018) examined visitors' preferences and experiences in Kruger National Park, South Africa. They found that the content of photographs posted on Instagram and Flickr by tourists was similar to the preferences for specific experiences as expressed in surveys of visitors in the Park. Although the perceived images of destinations consist of

many aspects, the photographs tourists take and share do reflect important aspects of designation images including varying perspectives and means of interaction (Gillet et al., 2013) and can provide important insights for destination marketing (Stepchenkova & Zhan, 2013; Mak, 2017).

Among the social media platforms, Flickr has been a valuable source of data for nature-based tourism research (Teles da Mota & Pickering, 2020; Sinclair et al., 2020; Nusair, 2020). This popular social networking platform is used to share photographs with over 90 million monthly users and over 75 million registered photographers from 63 countries (Smith, 2020). There are more than 10 billion photographs of which 6.5 billion are publicly available and cover thousands of nature-based tourism destinations also in developing countries (Flickr, 2019; Smith, 2020). In addition to the photographs themselves, metadata about the photographs can be obtained for free from Flickr including the exact location and time the photograph was taken, any titles, tags and descriptions added to the photographs by users, as well as the number of times photographs have been viewed by others (Stepchenkova & Zhan, 2013; Rossi et al., 2019; Teles da Mota & Pickering, 2020). As a result, Flickr provides a record of nature-based tourists experiences in important destinations, including in national parks in developing countries such as Nepal.

With diverse natural landscapes and rich cultural heritage, Nepal provides a wide range of nature-based tourism opportunities (KC et al., 2021; Nepal & Karst, 2017), and tourism is important, contributing 6.7% of total GDP and accounting for 6.9% of employment pre-COVID (WTC 2019). However, research on many aspects of tourism including destination image, marketing strategies, and/or the use of internet and social media for nature-based tourism remains sparse for Nepal (Yadav, 2018), as it does for many other developing countries, compared to the volume of research for Europe and North America (Zeng & Gerritsen, 2014; Ávila-Robinson & Wakabayashi, 2018; Teles da Mota & Pickering, 2020). Funding and skilled resources for tourism marketing, as well as the management of nature-based tourism destinations such as national parks in Nepal are also very limited (Nepal Government, 2020c). This includes Chitwan National Park (Nepal Government, 2017), close to Kathmandu, the capital of Nepal, which is popular with Nepalese and international nature-based tourists (Nepal Government, 2020a).

As the use of online photographs from social media is an emerging but still novel source of tourism data (Teles da Mota & Pickering, 2020; Sinclair et al., 2020; Nusair, 2020) more research is required to evaluate its benefits and limitations especially when addressing issues in nature-based tourism (perceived and projected images) and places (countries such as Nepal). Therefore, this study compares projected images with perceived image of Chitwan National Park, where photographs posted online by the Nepalese Government as well as national and international tour companies to market the Park were used to assess projected destination image while photographs taken in the Park and posted to Flickr were used to assess nature-based tourists' perceived destination image. The contents of the photographs were analysed to evaluate: (1) projected, and (2) perceived images of the Park, (3) map where tourists took photographs with specific content, and (4) their popularity with others online, and (5) identify congruency and discord between these projected and perceived images. The implications of the results for marketing and managing Chitwan are then addressed, as well as how this approach could be applied to other nature-based tourism destinations and benefits and limitations of using online photographs posted to social media.

2. Methods

2.1. Study area

Chitwan National Park is a UNESCO World Heritage Site located 150 km south of the capital city Kathmandu. It is the first national park in Nepal with the core of the Park covering 953 km^2 and an additional 729

km^2 buffer zone (Nepal Government, 2019). The most popular times to visit are spring (February–April) and autumn (September–November) (Paudel, 2017) and in most years it attracts around 200,000 visitors (≈75% international), except in 2015 when a large earthquake devastated much of Nepal, and in 2020–2021 due to the effects of COVID-19 (Nepal Government, 2020a). Popular tourism activities include elephant safaris, visiting the gharial and vulture breeding centers as well as guided wildlife walks and jeep safaris. Bishhazari Lake, a Ramsar wetland, is the main location for bird and gharial crocodile viewing. Other activities include cultural tourism, such as visits to a Tharu cultural museum and research center, an information center, a souvenir shop with handicrafts and local products as well as home stays at Tharu village. Religious and historical sites, such as the Balmiki Ashram (hermitage) and Bikram Baba (temple), provide opportunities for Hindu pilgrims as well as others interested in history and archaeology (Nepal Government, 2019).

2.2. Data collection

To assess projected images for the Park, photographs posted on the Nepal Tourism Board (Nepal Government, 2020b) and Chitwan National Park (Nepal Government, 2020a) websites as well as those of companies providing tours to the Park were identified. Tour companies were identified by searching the internet using the terms "tour operators in Chitwan National Park" between 7 and 22 April 2020. A total of 705 photographs about tours in the Park were available online across the two government and 52 tour company websites. However, 55 of the photographs from tour companies were not from the Park but of temples in Kathmandu or snow-capped mountains, and all five photographs from one company were of animals not found in Nepal. Therefore, 645 online photographs from 51 tour companies and two government websites were retained for further analysis.

Tourist photographs on Flickr were used to assess perceived images of the Park. Metadata for all geolocated photographs in the Park publicly available on Flickr till the end of 2019 were obtained using an Application Programming Interface (https://www.flickr.com/services/api) and the statistical program R Studio. The area of the Park and surrounding buffer zone was divided into grids measuring 0.2degrees horizontal spacing using QGIS and metadata for photographs taken within each of those grids downloaded. This included the owners identifying number, date, and time the photograph was taken and date and time it was uploaded, number of views by others, latitude, and longitude where the photograph was taken. This resulted in 12,037 photographs posted by 503 tourists (mean 24), but most tourists only posted a few photographs (325 tourists <10), while a few (25 tourists) posted hundreds. Therefore, to avoid an overrepresentation of the destination image(s) of some tourists, a maximum of three photographs (the most viewed) per tourist were selected resulting in 1214 photographs from 503 tourists for further analysis.

2.3. Content analysis of photographs

The content of the photographs was analysed using a quantitative metonymic approach similar to other studies of destination images including in parks (Castley et al., 2013; Stepchenkova & Zhan, 2013; Rossi et al., 2019; Pickering et al., 2020). The photographs were assigned to a series of predetermined categories and sub-categories relating to the different tourist attractions and features of the destination by the first author who is familiar with the Park, culture, and biota (Table 1). These categories and sub-categories were formed following the CICES V4.3 framework (Haines-Young & Potschin, 2013) based on the current five-year tourism plan of the Park (Nepal Government, 2017), the first author's prior experience of the Park, and the results of other studies of destination image for national parks (Castley et al., 2013; Rossi et al., 2019, Pickering et al., 2020). They included categories relating to wildlife, landscapes, tourism activities, cultural tourism,

Table 1

Hierarchy of categories and sub-categories used to code the contents of online photographs of Chitwan National Park.

Wildlife	Landscape	Recreation	Cultural tourism	Tourist facilities	Miscellaneous
Elephant	Forest	Elephant riding	Ethnic people	Hotel/lodge	Sunset/sunrise
Rhino	Grasslands	Elephant bathing	Ethnic dance	Village stay	Flowers
Tigers	Wetlands	Canoeing/boating	Traditional agriculture	Meals	Selfies
Crocodiles	Mountains	Jeep safari/Walking	Traditional infrastructure	Other tourism facilities	Management
Birds		Swimming	Traditional transport/vehicles		General other
Other wildlife		Bird watching	Local food		
		Elephant sports	Temples		
			Other cultural things		

tourist facilities and miscellaneous content. Discussions were carried out among the authors in formulating the categories/sub-categories, and then again in coding any photographs where there was any ambiguity in the content (Rose & Johnson, 2020). This approach directly codes the apparent content of the photographs based on dominant features (Picazo and Moreno-Gill 2017) where a single photograph could represent multiple categories. For example, one photograph could include content relating to wildlife as well as landscapes (such as a rhino in a forest), or recreational activities and landscapes (such as a boat on the river). The number of views of the photographs on Flickr was used to calculate popularity. However, to deal with possible bias associated with how long photographs were available on Flickr, we used the average views per day by dividing total views by the number of days from when the photograph was posted to Flickr to when data were downloaded for the study.

2.4. Data analysis

Differences between projected and perceived images were assessed by comparing the frequency with which photographs with specific content were used in marketing and by tourists using Chi-square tests in Excel. The number of Flickr photographs per month (capped at three per tourist) was compared to the number of Park visitors per month (Nepal Government, 2020a) using Spearman's Rank Correlation Coefficient, as social media data can correlate with equivalent park visitation data (Teles da Mota & Pickering, 2020). To assess spatial patterns in the content of tourists' photographs, the geolocation of Flickr photographs was plotted using QGIS Desktop 3.4.15 plus maps for photographs with

specific types of content. The popularity of photographs depending on content with others on Flickr was also assessed using nonparametric (Mann-Whitney U) tests in SPSS version 25 by comparing average views per day with and without the specific content.

3. Results

3.1. Projected images of the Park

A total of 645 photographs of the Park, 602 from 51 private tour operators and 43 from the two Nepal Government websites (Nepal Tourism Board and Chitwan National Park) were analysed. The most common content apparent in these photographs was wildlife (49.0%), followed by tourism activities (29.5%), landscapes (19.8%), and culture (11.9%) with 10.7% of photographs showing miscellaneous content such as sunset and sunrise, flowers, selfies, signboards, and military check points. Tourism facilities only appeared in 3.1% of these photographs (Table 3, Fig. 3a).

3.2. Perceived images of the Park and where and when they were taken

Perceived images of the Park were assessed using 1214 photographs posted by 503 tourists. Tourists mostly posted photographs of wildlife (42.7%), followed by landscapes (24.5%), culture (21.4%) and miscellaneous (19.3%) with 11.7% of the photographs of tourism activities but only 2.0% of tourist facilities (Table 3, Fig. 3a). Slightly more than half (58.0%) of the photographs were taken in the buffer zone and then mainly in the Sauraha area in the central east (Fig. 1a) where nearly 85%
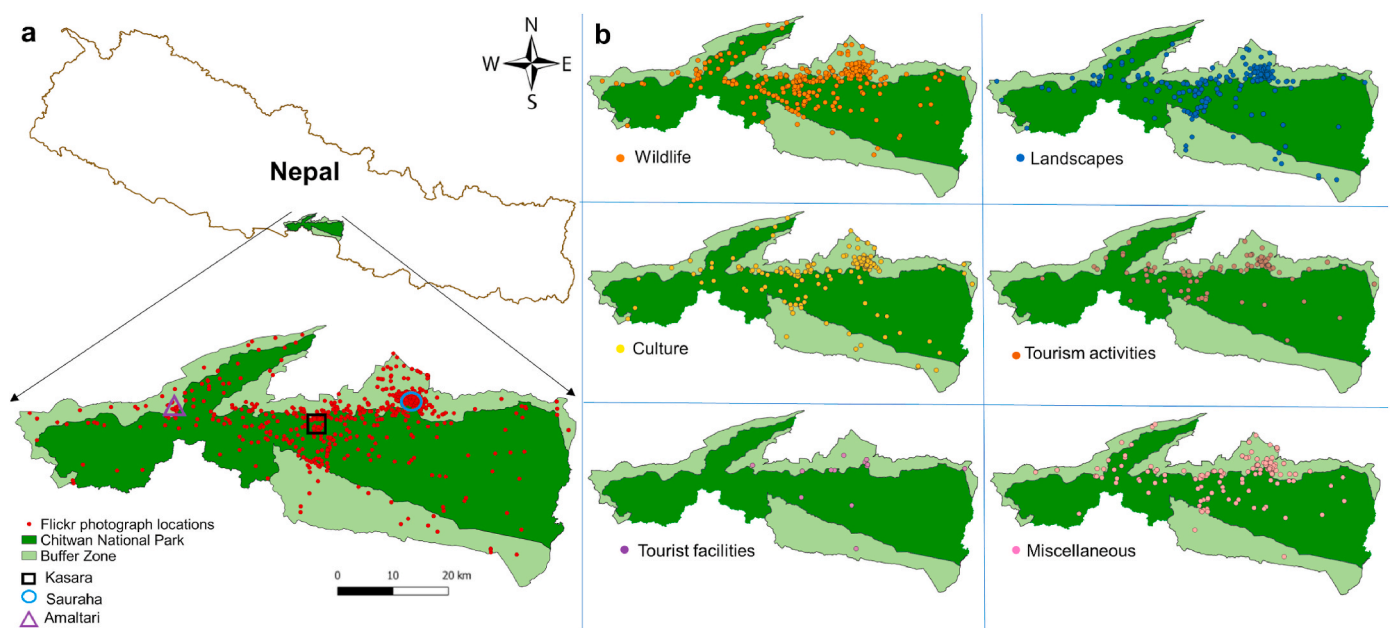

Fig. 1. Location of Chitwan National Park including three main entrance points and where photographs on Flickr were taken by visitors: (a) all photographs and (b) photographs with specific content.
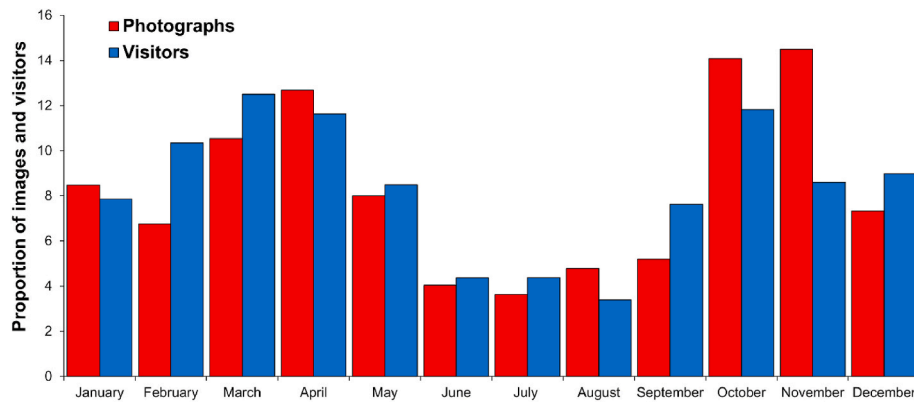
Fig. 2. Comparison of proportion of photographs taken by visitors per month with visitation per month for Chitwan National Park.

of tourists enter the Park (Nepal Government, 2020a). Two other main entrance points at Kasara (Park headquarters, around 10% of tourists enter the Park) and Amaltari (around 2% of tourists enter the Park) have fewer photographs. The distribution of photographs varied including between the Park and buffer zone depending on content (Fig. 1b, Chi-square = 32.3, p-value<0.001 and Cramer's V = 0.1). Photographs of wildlife were mainly from the core of the Park rather than the buffer zone, while photographs of culture were mainly from the buffer zone with few taken inside the core of the Park. Photographs of landscapes and tourism activities were scattered across the core and buffer zones while photographs depicting tourism facilities and miscellaneous attributes were from the buffer zone with few in the core of the Park (Fig. 1b).

Most photographs were taken in October–November or March–April (Fig. 2), which are the main tourist seasons. The number of photographs per month was strongly correlated with the number of tourists per month to the Park (Spearman Rank correlation rho = 0.748, p < 0.01, N = 12).

Photographs of the Park on Flickr were popular with a total of 1,177,179 views (1048.6 per day), with a mean of 969.1 (0.9 per day), a median of 245 per photograph (0.1 per day) and a SD of 2746.9 (9.4 per day). Popularity depended on content, with photographs of wildlife and culture being more popular, while those showing tourism activities and miscellaneous attributes were less likely to be viewed by others. There were no significant differences in the number of views of photographs with and without landscapes or tourism facilities (Table 2).

3.3. Similarities and differences between projected and perceived images

There were significant differences in the content of photographs posted by tour companies and the Government, and those posted by tourists (Table 3; Fig. 3). Websites promoting tourism were more likely to have photographs of wildlife and tourism activities while photographs of wildlife, landscapes and cultural attributes were more popular with tourists (Chi-squared test, p < 0.05). Although wildlife was popular with both those promoting and visiting the Park, there were major differences in which animals were shown. Rhinos, tigers, and birds were popular in marketing while tourists preferred posting photographs of elephants, but both had similar proportions of photographs showing gharial crocodiles. Tourists were also more likely to post photographs of landscapes, involving forests and wetlands, than tourism companies and the Government. Photographs of grasslands and mountains were similar between both projected and perceived photographs. Tourism activities were common in promotion, but less so with tourists. These included photographs of jeep or walking jungle safaris, elephant riding and boating/canoeing. However, there were no significant differences in the proportion of photographs of elephant bathing between projected and perceived photographs. Bird watching was also marketed (although only

one photograph), but elephant sports (polo) were not. Tourists, however, posted photographs of both activities.

Tourists posted many photographs relating to the culture of the area, involving ethnic people, traditional agriculture, and traditional transport/vehicles: content uncommon in projected photographs. The few photographs posted by tourism companies relating to locals were of people doing traditional dancing. Temples, historical monuments, and other religious destinations in the Park were rare in both projected and perceived photographs. Photographs of Tharu homestays were also rare. Overall, tourism facilities appeared at similar frequency in projected and perceived photographs, but tour companies were more likely to post photographs of hotels and lodges. Miscellaneous attributes, such as sunset/sunrise, cattle, pets, and local markets, were more frequent in perceived photographs whereas projected photographs were more likely to include park management attributes such as signboards and military check points.

4. Discussion

This study explored the image of Chitwan National Park, a popular nature-based tourism destination in Nepal by analyzing the content of online photographs. The results indicate that the image(s) of the Park includes natural elements such as wildlife, landscapes, cultural elements, tourism activities and facilities. However, the degree to which these dimensions were emphasized differed between projected and perceived images as found in other studies such as Stepchenkova and Zhan (2013) and Mak (2017). These findings have a range of practical and methodological implications for this Park while providing insights relevant to marketing other nature-based tourism destinations in Nepal and other developing countries.

From a practical perspective, this study revealed that the image of the Park projected by destination marketing is predominantly of a natural area with charismatic wildlife (rhinos, elephants), stunning landscapes (rivers, lakes, mountains) and exciting activities (jungle safari, elephant riding), which is similar to the interests of nature-based tourists in Nepal (Kafle, 2014; Pandit et al., 2015) and their perceived images. However, important cultural, historical, and religious dimensions, such as Tharu homestay, ethnic dresses and cuisines, temples, and hermitages (Nepal Government, 2017), were rare in photographs marketing the Park. Limited familiarity with cultural opportunities among tourists has been reported previously and was due, at least in part, to limited promotion of these types of attractions in marketing (Kafle, 2014). Other important dimensions, such as education and awareness raising, as well as promoting local products (such as handmade crafts) to sustain the local economy (TIES 2019), were also largely absent from projected photographs. The current five-year plan for tourism in the Park (Nepal Government, 2017), emphasizes expansion of cultural attractions including homestays, but there appears to be a lack of coordination
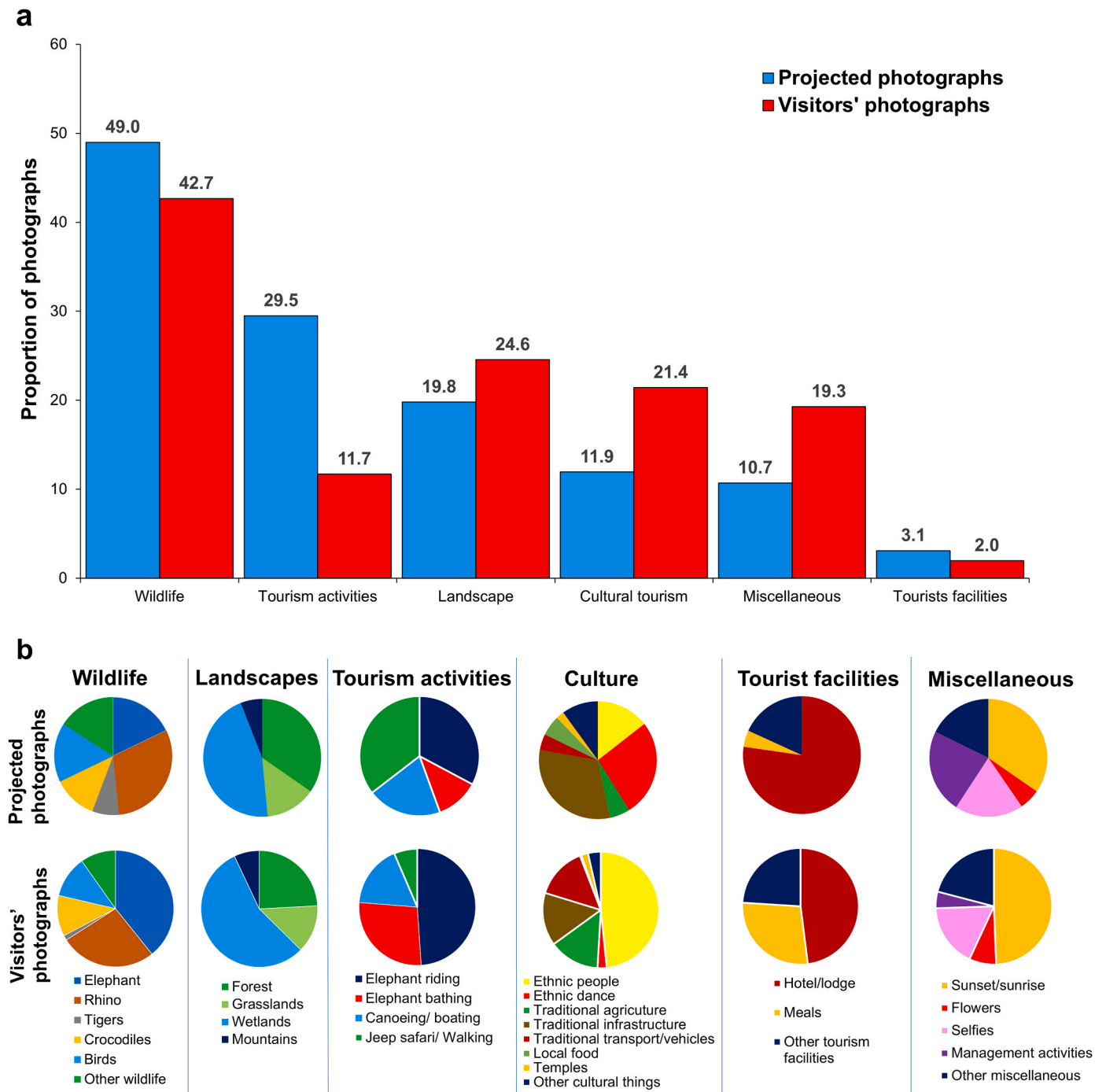
Fig. 3. Proportions of projected and perceived photographs with specific content for Chitwan National Park: (a) major categories and (b) sub-categories.

between planners and those marketing the Park (Nepal Government, 2017).

The analysis of Flickr photographs highlighted some aspects of tourists' preferences (see Tran and Ralston (2006) for definition) as they select among a set of options within the park about what photograph, and then post (Donaire et al., 2014; Stepchenkova & Zhan, 2013; Hausmann et al., 2018). They selected images of landscapes, and culture in Chitwan National Park reflecting preferences for eco-tourism and cultural tourism over adventure tourism options (Tran & Ralston, 2006). Charismatic wildlife and dramatic landscapes are major attractions of nature-based tourism (Grünewald et al., 2016) while exploring and

authentic engagement with local cultures and people is an increasing motivation for tourists (Stepchenkova & Zhan, 2013; Chen & Rahman, 2018). Tourist preferences for some activities such as riding or washing elephants, canoeing and jungle safaris and other attributes (e.g., sunset/sunrise, garden flowers, cattle, and dogs) indicate their interests in more general dimensions of the Park thus providing opportunities for marketers to diversify the projected image of the Park to better align with nature-based tourists' interests (Buhalis & Foerste, 2015; Molina et al., 2010; Neuhofer et al., 2012; Perkins & Grace, 2009; Zhao et al., 2018).

The content of the photographs as measures of projected and

Table 2

Non-parametric tests comparing the number of views per day for photographs on Flickr with, or without, specific content from Chitwan National Park.

Test Variable	Total photographs (N)	Views per day (mean)	Mean rank	Mann-Whitney U	p value
Wildlife	518	615.2	630.4	168380.5	**<0.05**
All other photographs[a]	696	433.5	590.4		
Landscapes	298	498.1	596.2	133,114	0.521
All other photographs[a]	916	550.5	611.2		
Tourism activities	142	46.8	549.6	67882.5	**0.036**
All other photographs[a]	1072	1001.9	615.2		
Culture	260	277.1	687.8	103143.5	**<0.001**
All other photographs[a]	954	771.5	585.6		
Tourism facilities	24	15.5	592.9	13,930	0.837
All other photographs[a]	1190	1033.1	607.8		
Miscellaneous	234	474.2	531.5	96,871	**<0.001**
All other photographs[a]	980	574.5	625.6		

[a] Photographs without the specific content in the test group variable.

perceived images displayed some congruency particularly for natural attributes of the Park, although there were still differences in some specifics. The focus on iconic and charismatic rhinos, elephants, tigers, and gharial crocodiles in projected photographs may reflect marketers' intentions to showcase wildlife as often seen among wildlife tourism destinations (Castley et al., 2013). However, more photographs of elephants compared to rhinos posted by tourists might reflect opportunity and visibility, as elephants can be easily encountered at breeding centers or on elephant rides while rhinos are not kept in captivity and are more elusive in the wild (Brandt, 2016). The near complete absence of tigers in tourists' photographs, in contrast to marketing images, reflects reality, with few tigers in the Park (Karki et al., 2015), and inherent difficulties in photographing these solitary animals with large territories (Tyagi et al., 2019). The limited number of photographs of birds posted by tourists may also reflect difficulties in capturing images of smaller and more mobile species, although bird tourism is popular also in Nepal

Table 3

Proportion of images with different content of Chitwan National Park from photographs promoting the Park online (projected) and those taken by tourists and posted to Flickr (perceived). NA=Chi-Square test could not be applied due to small numbers.

Photograph content	% projected photographs (N = 645)	% perceived photographs (N = 1214)	Chi-square (P Value)	(Cramer's V)
Wildlife	**49.0**	**42.7**	3.7 (0.053)	–
Elephant	8.7	16.8	**19.9 (<0.001)**	0.276
Rhino	14.9	11.4	**3.9 (0.048)**	0.129
Tigers	3.6	0.6	**23.3 (<0.001)**	0.881
Crocodiles	5.9	4.9	0.9 (0.354)	–
Birds	7.9	4.9	**9.8 (0.013)**	0.311
Other wildlife	7.8	4.2	**6.2 (0.002)**	0.236
Landscape	**19.8**	**24.5**	**3.9 (0.048)**	0.095
Forest	10.9	7.7	**4.9 (0.027)**	0.173
Grasslands	4.3	4.2	0.0 (0.890)	–
Wetlands	14.3	17.6	2.9 (0.089)	–
Mountains	1.9	2.2	0.3 (0.606)	–
Tourism activities	**29.5**	**11.7**	**74.4 (<0.001)**	0.473
Elephant riding	9.6	5.6	**9.7 (0.002)**	0.272
Elephant bathing	3.4	3.1	0.1 (0.749)	–
Canoeing/boating	5.9	2.0	**19.4 (<0.001)**	0.558
Jeep safari/walking	10.4	0.7	**95.9 (<0.001)**	1
Swimming	0.0	0.2	NA	NA
Bird watching	0.2	0.0	NA	NA
Elephant sports	0.0	0.1	NA	NA
Cultural tourism	**11.9**	**21.4**	**20.9 (<0.001)**	0.248
Ethnic people	2.0	12.4	**51.9 (<0.001)**	0.562
Ethnic dance	3.7	0.7	**23.0 (<0.001)**	0.846
Traditional agriculture	0.8	3.6	**13.0 (<0.001)**	0.514
Traditional infrastructure	4.3	3.8	0.3 (0.571)	–
Traditional transport/vehicles	0.6	3.7	**15.2 (<0.001)**	0.557
Local food	0.8	0.1	NA	NA
Temples	0.3	0.5	NA	NA
Other cultural things	1.4	0.9	0.9 (0.333)	–
Tourist facilities	**3.1**	**2.0**	2.2 (0.134)	-
Hotel/lodge	2.6	1.0	**7.3 (0.007)**	0.503
Meals	0.2	0.6	NA	NA
Other tourism facilities	0.6	0.5	NA	NA
Miscellaneous	**10.7**	**19.3**	**19.0 (<0.001)**	0.251
Sunset/sunrise	3.7	9.7	**19.8 (<0.001)**	0.373
Flowers	0.6	1.5	2.6 (0.104)	–
Selfies	2.0	3.5	3.0 (0.085)	–
Management activities	2.5	0.9	**7.2 (0.007)**	0.515
Other miscellaneous	1.9	4.1	**6.4 (0.011)**	0.322

*The values in bold represent significant values.

(Nepal Government, 2020b). Other wildlife, such as deer, wild boar, sloth beer, butterflies, were largely ignored by marketers, but some tourists were interested in them based on the content of their photographs.

The major discordance in the results was the prevalence of cultural attributes in perceived but not projected images, potentially reflecting a limitation with current tourism marketing (KC et al., 2021) and limited information currently available about tourists' preferences and experiences in the Park (Nepal Government, 2017). Such mismatches between projected and perceived destination images can impede the completion of 'hermeneutic circles of representation' (Bordelon & Ferreira, 2017) and hence adversely affect tourist satisfaction, resulting in negative feedback affecting tourism in the long run (Chan & Zhang, 2018; Chi & Qu, 2008; Chon, 1990; Ji & Wall, 2014). Therefore, we recommend that tour companies and the Government try to better match tourist experience with marketing, counting visitor surveys in the Park as well as harnessing insights from review websites and other social media platforms such as Facebook, Instagram, or Twitter, to further understand tourists' experiences in the Park.

This study also highlights how nature-based tourism marketing by Government and private companies could better harness online photographs in marketing. In this e-commerce age, the internet, including social media, is a vital tool for marketing and managing tourism in Parks together with understanding destination image formation, tourists' preferences, perceptions and behaviour (Zeng & Gerritsen, 2014; Ávila-Robinson & Wakabayashi, 2018; Garay, 2019) with social media often seen as a trustworthy source of travel information (Xiang & Gretzel, 2010; Guo et al., 2014; Buhalis & Foerste, 2015; Marasco et al., 2018; Berhanu and Raj 2020). Online marketing, because of its capacity to disseminate information over broad temporal and spatial scales is not only cost-effective (Donohoe & Needham, 2008), but is critical to the industry (Sangpikul, 2010; Buhalis & Foerste, 2015; Kaur, 2017). While online marketing has proved beneficial for a wide range of tourism destinations, including marketing to geographically diverse audiences (e.g. Riasi & Pourmiri, 2015; Teodorov et al., 2020; Suryaningsih et al., 2020), marketers of Chitwan National Park, especially Government websites do not appear to be making the most of this medium (Yadav, 2018). Tourists in the past have complained about limited online information about the Park (Kafle, 2014). Online information remains sparse with the official tourism website for Nepal (Nepal Government, 2020b) only showing five photographs of the Park. The Park's own website (Nepal Government, 2020a) also contains few photographs, and is focused on management activities, such as animal translocations, and conferences/meetings, rather than nature-based tourism. Limitations with Nepal's online marketing strategy were also seen in a recent study where the Government's campaign to 'Visit Nepal 2020' (now delayed due to the COVID-19 pandemic), resulted in limited engagement on social media outside Nepal, including among people from major tourism markets such as USA, India, UK, Canada, and Australia (Bhatt & Pickering, 2021).

Private tour company websites were better than Government websites in marketing, in terms of the content and number of photographs of the Park, but photos were not always correct, with photographs of temples in Kathmandu, or animals not found in Nepal on their websites. Such sparse, limited, and inaccurate data, along with limited use of technology may impede global and local marketing (Sangpikul, 2010; Banyai & Glover, 2012; Herath et al., 2020). In contrast, there is massive engagement with social media about the Park based on the number of views of tourists' photographs from the Park on Flickr.

The content analysis of photographs for this popular tourism destination in Nepal demonstrates again how social media can be used to better understand destination images in developing countries. The metadata for the thousands of photographs taken in the Park were free, the content analysis of social media photographs is relatively straightforward, inexpensive, and time-effective; data can complement and expand on the results of traditional surveys about tourists' preferences

(Hausmann et al., 2018; Ghermandi & Sinclair, 2019; Teles da Mota & Pickering, 2020; Wan et al., 2021) and data can be obtained remotely without having to travel to the destination. The interests of potential new and repeat tourists can also be explored by analyzing the popularity of photographs on social media with others as was done here. In addition, geocoordinates for photographs can be used to map where people go thus identifying nature-based tourism hotspots and what features of those places tourists engage with (Walden-Schreiner et al., 2018; Rossi et al., 2019; Song et al., 2020; Sinclair et al., 2020). Knowing where tourists congregate is important for management (Ávila-Robinson & Wakabayashi, 2018) for providing facilities such as trails, signposts, safe drinking water, waste disposal bins, and security and first aid arrangements for tourists and monitoring and minimizing environmental impacts (Leung et al., 2018) and social conflicts (Cessford & Muhar, 2003). Correlations between tourist numbers and Flickr photographs here and in other destinations (Sessions et al., 2016; Teles da Mota & Pickering, 2020; Wilkins et al., 2020; Sinclair et al., 2020) also show how social media can provide insights into temporal patterns in Park visitation. It is also possible to automatically code the content of photographs from social media (Väisänen et al., 2021) providing additional opportunities for insights into visitor preferences.

Social media has numerous benefits for understanding tourists, but also important limitations. Flickr, like other social media platforms, does not represent the views of all tourists, because many tourists do not share their experiences on Flickr, or on social media at all (Hausmann et al., 2018). Rather, social media tends to reflect the views of young, richer, and more educated people (Smith & Anderson, 2018) and data about many tourism destinations, particularly less popular destinations, on social media is sparse (Barros et al., 2019). The popularity of different platforms varies among regions, demographics, and countries, and increasing restrictions on data access by some platforms and ethical and privacy issues are also important when analysing these and other types of social media data (Hausmann et al., 2018). In addition, the content analysis of the photographs using a metonymic approach can differ to how the photographs are 'seen' by those who took them and by the huge number of others who viewed them online (Stepchenkova & Zhan, 2013; Kim & Stepchenkova, 2015; Wang et al., 2020). Visitors surveys and other methods within destinations can overcome some of these limitations and provide greater insights into why people post content to social media.

5. Conclusion

This study showed how projected and perceived images based on the content of photographs of a major nature-based tourism destination in Nepal can differ with implications for marketing and management. It also adds to the sparse literature on tourism in general for Nepal and the still novel but expanding research analyzing the content of social media photographs for nature-based tourism in parks. Using online photographs, the study captured what marketers focus on and tourists' preferences, including potential discordances. In doing so, it demonstrated some of the benefits but also limitations of social media when exploring nature-based tourists' preferences and perceptions about destinations together with identifying hotspots and tourists' distributions. The findings of this research contribute to improving tourism marketing of the Park and the need for an increased focus on both natural and cultural attractions which go to the heart of the Park's mandate.

Credit author statement

Pragya Bhatt: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. Catherine Marina Pickering: Conceptualization, Methodology, Writing – review & editing.

Acknowledgements

References

Ashworth, G., & Goodall, B. (1988). Tourism images: Marketing considerations. In B. Goodall, & G. Ashworth (Eds.), *Marketing in the tourism industry: The promotion of destination regions* (pp. 213–238). London: Routledge.

Ávila-Robinson, A., & Wakabayashi, N. (2018). Changes in the structures and directions of destination management and marketing research: A bibliometric mapping study, 2005–2016. *Journal of Destination Marketing and Management, 10*, 101–111. https://doi.org/10.1016/j.jdmm.2018.06.005

Balmford, A., Green, J. M., Anderson, M., Beresford, J., Huang, C., Naidoo, R., Walpoe, M., & Manica, A. (2015). Walk on the wild side: Estimating the global magnitude of visits to protected areas. *PLoS Biology, 13*(2), Article e1002074. https://doi.org/10.1371/journal.pbio.1002074

Balomenou, N., & Garrod, B. (2019). Photographs in tourism research: Prejudice, power, performance and participant-generated images. *Tourism Management, 70*, 201–217. https://doi.org/10.1016/j.tourman.2018.08.014

Banyai, M., & Glover, T. D. (2012). Evaluating research methods on travel blogs. *Journal of Travel Research, 51*(3), 267–277. https://doi.org/10.1177/0047287511410323

Barros, C., Moya-Gómez, B., & Gutiérrez, J. (2019). Using geotagged photographs and GPS tracks from social networks to analyse visitor behaviour in national parks. *Current Issues in Tourism, 23*(10), 1291–1310. https://doi.org/10.1080/13683500.2019.1619674

Bednar, R. (2012). Being here, looking there. In T. Patin (Ed.), *Observation points: The visual poetics of national parks* (pp. 1–28). Minneapolis: University of Minnesota Press.

Beerli, A., & Martin, J. D. (2004). Tourists' characteristics and the perceived image of tourist destinations: A quantitative analysis—a case study of lanzarote, Spain. *Tourism Management, 25*(5), 623–636. https://doi.org/10.1016/j.tourman.2003.06.004

Berhanu, K., & Raj, S. (2020). The trustworthiness of travel and tourism information sources of social media: Perspectives of international tourists visiting Ethiopia. *Heliyon, 6*(3), Article e03439. https://doi.org/10.1016/j.heliyon.2020.e03439

Bhatt, P., & Pickering, C. M. (2021). Public perceptions about Nepalese national parks: A global twitter discourse analysis. *Society & Natural Resources*. https://doi.org/10.1080/08941920.2021.1876193

Bigne, E., Ruiz, C., Cuenca, A., Perez, C., & Garcia, A. (2021). What drives the helpfulness of online reviews? A deep learning study of sentiment analysis, pictorial content and reviewer expertise for mature destinations. *Journal of Destination Marketing and Management, 20*, 100570. https://doi.org/10.1016/j.jdmm.2021.100570

Bordelon, L. A., & Ferreira, S. L. A. (2017). Tourist photographs and destination imagery on social media: Reading the Stellenbosch Winelands through a tourist lens. *Tourism Review International, 21*(3), 317–329. https://doi.org/10.3727/154427217x15022104437765

Bramwell, B., & Rawding, L. (1996). Tourism marketing images of industrial cities. *Annals of Tourism Research, 13*(1), 201–221.

Brandt, J. R. (2016). *Conservation and population Genetics of African and asian rhinoceros. PhD thesis.* Urbana, Illinois: University of Illinois. Available at: https://www.ideals.illinois.edu/bitstream/handle/2142/92892/BRANDT-DISSERTATION-2016.pdf?sequence=1&isAllowed=y.

Buhalis, D., & Foerste, M. (2015). SoCoMo marketing for travel and tourism: Empowering co-creation of value. *Journal of Destination Marketing and Management, 4*(3), 151–161. https://doi.org/10.1016/j.jdmm.2015.04.001

Castley, J. G., Bennett, A., & Pickering, C. M. (2013). Wildlife visual imagery: Do pictures used to promote destinations online match on-site species visibility at two geographic destinations? *Geographical Research, 51*(1), 59–70. https://doi.org/10.1111/j.1745-5871.2012.00767.x

Caton, K., & Santos, C. A. (2008). Closing the hermeneutic circle? Photographic encounters with the other. *Annals of Tourism Research, 35*(1), 7–26. https://doi.org/10.1016/j.annals.2007.03.014

Cessford, G., & Muhar, A. (2003). Monitoring options for visitor numbers in national parks and natural areas. *Journal for Nature Conservation, 11*(4), 240–250. https://doi.org/10.1078/1617-1381-00055

Chan, C.-S., & Zhang, Y. (2018). Matching projected image with perceived image for geotourism development: A qualitative-quantitative integration. *Asian Geographer, 35*(2), 143–160. https://doi.org/10.1080/10225706.2018.1527235

Chen, H., & Rahman, I. (2018). Cultural tourism: An analysis of engagement, cultural contact, memorable tourism experience and destination loyalty. *Tourism Management Perspectives, 26*, 153–163. https://doi.org/10.1016/j.tmp.2017.10.006

Chi, C. G.-Q., & Qu, H. (2008). Examining the structural relationships of destination image, tourist satisfaction and destination loyalty: An integrated approach. *Tourism Management, 29*(4), 624–636. https://doi.org/10.1016/j.tourman.2007.06.007

Chi, T., Wu, B., Morrison, A. M., Zhang, J. R., & Chen, Y.-C. (2015). Travel blogs on China as a destination image formation agent: A qualitative analysis using leximancer. *Tourism Management, 46*, 347–358.

Chon, K. S. (1990). The role of destination image in tourism: A review and discussion. *Tourism Review, 45*(2), 2–9.

Çoban, S. (2012). The effects of the image of destination on tourist satisfaction and loyalty: The case of Cappadocia. *European Journal of Social Sciences, 29*(2), 222–232.

Crompton, J. L. (1979). An assessment of the image of Mexico as a vacation destination and the influence of geographical location upon that image. *Journal of Travel Research, 17*, 18–23. https://doi.org/10.1177/004728757901700404

Das, D., & Hussain, I. (2016). Does ecotourism affect economic welfare? Evidence from kaziranga national park, India. *Journal of Ecotourism, 15*(3), 241–260. https://doi.org/10.1080/14724049.2016.1192180

Donaire, J. A., Camprubí, R., & Galí, N. (2014). Tourist clusters from Flickr travel photography. *Tourism Management Perspectives, 11*, 26–33. https://doi.org/10.1016/j.tmp.2014.02.003

Donohoe, H. M., & Needham, R. D. (2008). Internet-based ecotourism marketing: Evaluating Canadian sensitivity to ecotourism tenets. *Journal of Ecotourism, 7*(1), 15–43. https://doi.org/10.2167/joe185.0

Flickr. (2019). https://www.flickr.com/. (Accessed December 2019).

Galí, N., & Donaire, J. A. (2015). Tourists taking photographs: The long tail in tourists' perceived image of Barcelona. *Current Issues in Tourism, 18*(9), 893–902. https://doi.org/10.1080/13683500.2015.1037255

Garay, L. (2019). Visitspain. Breaking down affective and cognitive attributes in the social media construction of the tourist destination image. *Tourism Management Perspectives, 32*, 100560. https://doi.org/10.1016/j.tmp.2019.100560

Garrod, B. (2009). Understanding the relationship between tourism destination imagery and tourist photography. *Journal of Travel Research, 47*(3), 346–348. https://doi.org/10.1177/0047287508322785

Gartner, W. C. (1993). Image formation process. *Journal of Travel & Tourism Marketing, 2*(2–3), 191–215. https://doi.org/10.1300/J073v02n02_12

Gertner, D. (2011). Unfolding and configuring two decades of research and publications on place marketing and place branding. *Place Branding and Public Diplomacy, 7*(2), 91–106.

Ghermandi, A., & Sinclair, M. (2019). Passive crowdsourcing of social media data in environmental research: A systematic review. *Global Environmental Change, 55*, 36–47. https://doi.org/10.1016/j.gloenvcha.2019.02.003

Gillet, S., Schmitz, P., & Mitas, O. (2013). The snap-happy tourist: The effects of photographing behaviour on tourists' happiness. *Journal of Hospitality & Tourism Research, 40*(1), 37–57. https://doi.org/10.1177/1096348013491606

Grosspietsch, M. (2006). Perceived and projected images of Rwanda: Visitor and international tour operator perspectives. *Tourism Management, 27*(2), 225–234. https://doi.org/10.1016/j.tourman.2004.08.005

Grünewald, C., Schleuning, M., & Böhning-Gaese, K. (2016). Biodiversity, scenery and infrastructure: Factors driving wildlife tourism in an African savannah national park. *Biological Conservation, 201*, 60–68. https://doi.org/10.1016/j.biocon.2016.05.036

Gunn, C. A. (1988). *Vacationscape: Designing tourist regions.* New York: Van Nostrand Reinhold.

Guo, X., Zheng, X., Ling, L., & Yang, C. (2014). Online coopetition between hotels and online travel agencies: From the perspective of cash back after stay. *Tourism Management Perspectives, 12*, 104–112. https://doi.org/10.1016/j.tmp.2014.09.005

Haines-Young, R., & Potschin, M. (2013). Common international classification of ecosystem services (CICES): Consultation on version 4, august-december 2012. EEA Framework Contract No EEA/IEA/09/003 https://cices.eu/content/uploads/sites/8/2012/07/CICES-V43_Revised-Final_Report_29012013.pdf/. (Accessed 28 October 2020).

Hausmann, A., Toivonen, T., Slotow, R., Tenkanen, H., Moilanen, A., Heikinheimo, V., & Di Minin, E. (2018). Social media data can be used to understand tourists' preferences for nature-based experiences in protected areas. *Conservation Letters, 11*(1). https://doi.org/10.1111/conl.12343

Herath, H., Hemmington, N., & Poulston, J. (2020). "Dirty pictures" – responsible photographic representation of tourism destinations. *Journal of Travel & Tourism Marketing, 37*(6), 663–678. https://doi.org/10.1080/10548408.2020.1789026

Jenkins, O. H. (1999). Understanding and measuring tourist destination images. *International Journal of Tourism Research, 1*, 1–15.

Jenkins, O. (2003). Photography and travel brochures: The circle of representation. *Tourism Geographies, 5*(3), 305–328. https://doi.org/10.1080/14616680309715

Ji, S., & Wall, G. (2014). Understanding supply- and demand-side destination image relationships. *Journal of Vacation Marketing, 21*(2), 205–222. https://doi.org/10.1177/1356766714542189

Job, H., Bittlingmaier, S., Mayer, M., von Ruschkowski, E., & Woltering, M. (2021). Park–people relationships: The socioeconomic monitoring of national parks in bavaria, Germany. *Sustainability, 13*(16), 8984. https://doi.org/10.3390/su13168984

Job, H., & Paesler, F. (2013). Links between nature-based tourism, protected areas, poverty alleviation and crises—the example of Wasini Island (Kenya). *Journal of Outdoor Recreation and Tourism, 1–2*, 18–28. https://doi.org/10.1016/j.jort.2013.04.004

Kafle, N. (2014). *Nature based Tourism and visitor Experiences in chitwan national park. Bachelors thesis.* Rovaniemi, Finland: Lapland University of Applied Sciences. Available at: https://www.theseus.fi/bitstream/handle/10024/70910/THESIS_Kafle_Nabin.pdf?sequence=1andisAllowed=y.

Karki, J., Pandav, B., Jnawali, S., Shrestha, R., Pradhan, N., Lamichhane, B., Khanal, P., Subedi, N., & Jhala, Y. (2015). Estimating the abundance of Nepal's largest population of tigers *Panthera tigris. Oryx, 49*(1), 150–156. https://doi.org/10.1017/S0030605313000471

Kaur, G. (2017). The importance of digital marketing in the tourism industry. *International Journal of Regulation and Governance, 5*(6), 72–77. https://doi.org/10.5281/zenodo.815854

Kc, B., Dhungana, A., & Dangi, T. B. (2021). Tourism and the sustainable development goals: Stakeholders' perspectives from Nepal. *Tourism Management Perspectives, 38*, 100822. https://doi.org/10.1016/j.tmp.2021.100822

Kim, H., & Stepchenkova, S. (2015). Effect of tourist photographs on attitudes towards destination: Manifest and latent content. *Tourism Management, 49*, 29–41. https://doi.org/10.1016/j.tourman.2015.02.004

Kladou, S., & Mavragani, E. (2015). Assessing destination image: An online marketing approach and the case of TripAdvisor. *Journal of Destination Marketing and Management, 4*(3), 187–193. https://doi.org/10.1016/j.jdmm.2015.04.003

Költringer, C., & Dickinger, A. (2015). Analyzing destination branding and image from online sources: A web content mining approach. *Journal of Business Research, 68*(9), 1836–1843. https://doi.org/10.1016/j.jbusres.2015.01.011

Kumar, S., & Dhir, A. (2020). Associations between travel and tourism competitiveness and culture. *Journal of Destination Marketing and Management, 18*, 100501. https://doi.org/10.1016/j.jdmm.2020.100501

Leung, D., Law, R., Hoof, H. V., & Buhalis, D. (2013). Social media in tourism and hospitality: A literature review. *Journal of Travel & Tourism Marketing, 30*(1–2), 3–22.

Leung, Y.-F., Spenceley, A., Hvenegaard, G., & Buckley, R. (2018). *Tourism and visitor management in protected areas: Guidelines for sustainability*. Gland, Switzerland: IUCN (International Union for Conservation of Nature and Natural Resources). https://doi.org/10.2305/IUCN.CH.2018.PAG.27.en

Loss, L. (2019). Tourism has generated 20% of total world employment since 2013. https://www.tourism-review.com/tourism-industry-is-the-pillar-of-economy-news11210. (Accessed 18 May 2021).

Mackay, K. J., & Fesenmaier, D. R. (1997). Pictorial element of destination in image formation. *Annals of Tourism Research, 24*(3), 537–565.

Mak, A. H. N. (2017). Online destination image: Comparing national tourism organisation's and tourists' perspectives. *Tourism Management, 60*, 280–297. https://doi.org/10.1016/j.tourman.2016.12.012

Marasco, A., Buonincontri, P., van Niekerk, M., Orlowski, M., & Okumus, F. (2018). Exploring the role of next-generation virtual technologies in destination marketing. *Journal of Destination Marketing & Management, 9*, 138–148. https://doi.org/10.1016/j.jdmm.2017.12.002

Marine-Roig, E., & Ferrer-Rosell, B. (2018). Measuring the gap between projected and perceived destination images of Catalonia using compositional analysis. *Tourism Management, 68*, 236–249. https://doi.org/10.1016/j.tourman.2018.03.020

Molina, A., Gómez, M., & David Martín-Consuegra, D. (2010). Tourism marketing information and destination image management. *African Journal of Business Management, 4*(5), 722–728. https://doi.org/10.5897/AJBM.9000651

Moreno-Llorca, R., Méndez, P. F., Ros-Candeira, A., Alcaraz-Segura, D., Santamaria, L., Ramos-Ridao, Á. F., Revilla, E., Bonet-García, F. J., & Vaz, A. S. (2020). Evaluating tourist profiles and nature-based experiences in Biosphere Reserves using Flickr: Matches and mismatches between online social surveys and photo content analysis. *The Science of the Total Environment, 737*, 140067. https://doi.org/10.1016/j.scitotenv.2020.140067

Mull, I. R., & Lee, S. E. (2014). "PIN" pointing the motivational dimensions behind Pinterest. *Computers in Human Behavior, 33*, 192–200. https://doi.org/10.1016/j.chb.2014.01.011

Nepal Government. (2017). *Chitwan national park and buffer zone tourism plan (2017/18-2021/22)*. Ministry of Forest and Soil Conservation, Department of National Parks and Wildlife Conservation. https://www.chitwannationalpark.gov.np/index.php/document-epository/publications-chitwan-national-park/49-chitwan-tourism-plan-final-2074/file.

Nepal Government. (2019). Website of the department of national parks and wildlife conservation. https://www.dnpwc.gov.np/.

Nepal Government. (2020a). Website of the chitwan national park. https://www.chitwannationalpark.gov.np/.

Nepal Government. (2020b). Website of Nepal tourism board. https://www.welcomenepal.com/.

Nepal Government. (2020c). Nepal government. In *Annual report 2019/2020. Ministry of forest and soil conservation*. Kathmandu, Nepal: Department of National Parks and Wildlife Conservation. http://www.dnpwc.gov.np/media/files/DNPWC_Annual_Report-_077_Final.pdf. (Accessed 22 June 2021), 2020.

Nepal, S., & Karst, H. (2017). Tourism in Bhutan and Nepal. In C. M. Hall, & S. J. Page (Eds.), *The routledge handbook of tourism in asia* (pp. 187–197). Oxon and New York: Routledge.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2012). Conceptualising technology enhanced destination experiences. *Journal of Destination Marketing and Management, 1*(1–2), 36–46. https://doi.org/10.1016/j.jdmm.2012.08.001

Nusair, K. (2020). Developing a comprehensive life cycle framework for social media research in hospitality and tourism. *International Journal of Contemporary Hospitality Management, 32*(3), 1041–1066. https://doi.org/10.1108/ijchm-09-2019-0777

Pandit, R., Dhakal, M., & Polyakov, M. (2015). Valuing access to protected areas in Nepal: The case of Chitwan National Park. *Tourism Management, 50*, 1–12. https://doi.org/10.1016/j.tourman.2014.12.017

Paudel, R. K. (2017). Changing trend of tourist flow in Chitwan. https://myrepublica.nagariknetwork.com/mycity/news/changing-trend-of-tourist-flow-in-chitwan#:~:text=The%20month%20of%20September%20to,the%20month%20February%20to%20April./. (Accessed 11 August 2020).

Paül i Agustí, D. (2021). The clustering of city images on Instagram: A comparison between projected and perceived images. *Journal of Destination Marketing and Management, 20*, 100608. https://doi.org/10.1016/j.jdmm.2021.100608

Perkins, H., & Grace, D. A. (2009). Ecotourism: Supply of nature or tourist demand? *Journal of Ecotourism, 8*(3), 223–236. https://doi.org/10.1080/14724040802534992

Picazo, P., & Moreno-Gil, S. (2017). Analysis of the projected image of tourism destinations on photographs: A literature review to prepare for the future. *Journal of Vacation Marketing, 25*(1), 3–24. https://doi.org/10.1177/1356766717736350

Pickering, C., Barros, A., Walden-Schreiner, C., & Rossi, S. (2020). Using social media images and text to examine how tourists view and value the highest mountain in Australia. *Journal of Outdoor Recreation and Tourism, 29*, 100252.

Pike, S. (2007). Destination image literature: 2001-2007. *Acta Turistica, 19*(2), 107–125.

Riasi, A., & Pourmiri, S. (2015). Effects of online marketing on Iranian ecotourism industry: Economic, sociological, and cultural aspects. *Management Science Letters, 5* (10), 915–926. https://doi.org/10.5267/j.msl.2015.8.005

Richards, D. R., & Friess, D. A. (2015). A rapid indicator of cultural ecosystem service usage at a fine spatial scale: Content analysis of social media photographs. *Ecological Indicators, 53*, 187–195. https://doi.org/10.1016/j.ecolind.2015.01.034

Rose, J., & Johnson, C. W. (2020). Contextualizing reliability and validity in qualitative research: Toward more rigorous and trustworthy qualitative social science in leisure research. *Journal of Leisure Research, 51*(4), 432–451. https://doi.org/10.1080/00222216.2020.1722042

Rossi, S. D., Barros, A., Walden-Schreiner, C., & Pickering, C. (2019). Using social media images to assess ecosystem services in a remote protected area in the Argentinean Andes. *Ambio, 49*, 1146–1160. https://doi.org/10.1007/s13280-019-01268-w

Sangpikul, A. (2010). Marketing ecotourism through the internet: A case of ecotourism business in Thailand. *International Journal of Hospitality & Tourism Administration, 11* (2), 107–137. https://doi.org/10.1080/15256481003732782

Sessions, C., Wood, S. A., Rabotyagov, S., & Fisher, D. M. (2016). Measuring recreational visitation at U.S. National Parks with crowd-sourced photographs. *Journal of Environmental Management, 183*(Pt 3), 703–711. https://doi.org/10.1016/j.jenvman.2016.09.018

Sinclair, M., Mayer, M., Woltering, M., & Ghermandi, A. (2020). Using social media to estimate visitor provenance and patterns of recreation in Germany's national parks. *Journal of Environmental Management, 263*, 110418. https://doi.org/10.1016/j.jenvman.2020.110418

Smith, C. (2020). 20 Interesting Flickr stats and facts (2020): By the numbers. https://expandedramblings.com/index.php/flickr-stats/. (Accessed 29 July 2020).

Smith, A., & Anderson, M. (2018). *Social media use in 2018*. USA: Pew Research Center. http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/. (Accessed 12 December 2019).

Snyman, S., & Bricker, K. S. (2019). Living on the edge: Benefit-sharing from protected area tourism. *Journal of Sustainable Tourism, 27*(6), 705–719. https://doi.org/10.1080/09669582.2019.1615496

Song, X. P., Richards, D. R., He, P., & Tan, P. Y. (2020). Does geo-located social media reflect the visit frequency of urban parks? A city-wide analysis using the count and content of photographs. *Landscape and Urban Planning, 203*, 103908. https://doi.org/10.1016/j.landurbplan.2020.103908

Spenceley, A., Schägner, J. P., Engels, B., Cullinane Thomas, C., Engelbauer, M., Erkkonen, J., Job, H., Kajala, L., Majewski, L., Mayer, M., Metzler, D., Rylance, A., Scheder, N., Smith-Christensen, C., Souza, T. B., & Woltering, M. (2021). *Visitors count! Guidance for protected areas on the economic analysis of visitation*. Paris: United Nations Educational, Scientific and Cultural Organization. France and German Federal Agency for Nature Conservation, Bonn, Germany.

Stepchenkova, S., & Zhan, F. (2013). Visual destination images of Peru: Comparative content analysis of DMO and user-generated photography. *Tourism Management, 36*, 590–601. https://doi.org/10.1016/j.tourman.2012.08.006

Suryaningsih, I. B., Wulandari, G. A., Nugraha, K. S. W., Paramita, C., & Yuri, Q. I. B. (2020). Digital marketing tools or e-WOM? Tourists motivation to enjoy the charm of blue fire on ijen crater ecotourism. *Journal of Environmental Management and Tourism, 11*(4-44), 802–808. https://doi.org/10.14505/jemt.v11.4(44).03

Tas, G. (2021). The role of social media in tourism marketing. https://digitaltravelapac.wbresearch.com/blog/social-media-in-tourism-marketing/. (Accessed 20 May 2021).

Tasci, A. D., & Gartner, W. C. (2007). Destination image and its functional relationships. *Journal of Travel Research, 45*(4), 413–425. https://doi.org/10.1177/0047287507299569

Teles da Mota, V., & Pickering, C. M. (2020). Using social media to assess nature-based tourism: Current research and future trends. *Journal of Outdoor Recreation and Tourism, 30*, 100295. https://doi.org/10.1016/j.jort.2020.100295.

Teodorov, A. V., Muresan, M. L., Dinu, D. M., & Dinu, A. C. (2020). Digital marketing on destination sustainability study case: Romanian ecotourism. Proceedings of the international conference on business excellence. *Sciendo, 14*(1), 859–867.

The International Ecotourism Society (TIES). (2019). What is Ecotourism?. https://ecotourism.org/what-is-ecotourism/. (Accessed 11 June 2020).

Tran, X., & Ralston, L. S. (2006). Tourist preferences influence of unconscious needs. *Annals of Tourism Research, 33*(2), 424–441.

Tsiotsou, R. H., & Ratten, V. (2010). Future research directions in tourism marketing. *Marketing Intelligence & Planning, 28*(4), 533–544. https://doi.org/10.1108/02634501011053702

Tyagi, A., Kumar, V., Kittur, S., Reddy, M., Naidenko, S., Ganswindt, A., & Umapathy, G. (2019). Physiological stress responses of tigers due to anthropogenic disturbance especially tourism in two central Indian tiger reserves. *Conservation Physiology, 7*(1), coz045. https://doi.org/10.1093/conphys/coz045

Urry, J. (1990). *The tourist gaze: Leisure and travel in contemporary societies*. London, UK: Sage.

Väisänen, T., Heikinheimo, V., Hiippala, T., & Toivonen, T. (2021). Exploring human-nature interactions in national parks with social media photographs and computer vision. *Conservation Biology, 35*(2), 424–436. https://doi.org/10.1111/cobi.13704

Walden-Schreiner, C., Leung, Y.-F., & Tateosian, L. (2018). Digital footprints: Incorporating crowdsourced geographic information for protected area

management. *Applied Geography, 90*, 44–54. https://doi.org/10.1016/j. apgeog.2017.11.004

Wang, R., Luo, J., & Huang, S. (2020). Developing an artificial intelligence framework for online destination image photos identification. *Journal of Destination Marketing and Management, 18*, 100502. https://doi.org/10.1016/j.jdmm.2020.100512

Wan, C., Shen, G. Q., & Choi, S. (2021). Eliciting users' preferences and values in urban parks: Evidence from analyzing social media data from Hong Kong. *Urban Forestry and Urban Greening, 62*. https://doi.org/10.1016/j.ufug.2021.127172

Wilkins, E. J., Wood, S. A., & Smith, J. W. (2020). Uses and limitations of social media to inform visitor use management in parks and protected areas: A systematic review. *Environmental Management, 67*, 120–132. https://doi.org/10.1007/s00267-020-01373-7

World Tourism Council (WTC). (2019). Economic impact reports. https://wttc.or g/Research/Economic-Impact/. (Accessed 14 July 2020).

World Tourism Organization (UNWTO). (2020). International tourism growth continues to outpace the global economy. https://www.unwto.org/international-tourism-g rowth-continues-to-outpace-the-economy/. (Accessed 27 October 2020).

Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management, 31*(2), 179–188.

Xie, K., & Lee, J.-S. (2013). Toward the perspective of cognitive destination image and destination personality: The case of Beijing. *Journal of Travel & Tourism Marketing, 30* (6), 538–556. https://doi.org/10.1080/10548408.2013.810993

Yadav, O. P. (2018). Study on internet marketing practices of tourism industry by travel agency of Nepal. *Pravaha, 24*(1), 137–146. https://doi.org/10.3126/pravaha. v24i1.20233

Zeng, B., & Gerritsen, R. (2014). What do we know about social media in tourism? A review. *Tourism Management Perspectives, 10*, 27–36. https://doi.org/10.1016/j. tmp.2014.01.001

Zhang, K., Chen, Y., & Li, C. (2019). Discovering the tourists' behaviours and perceptions in a tourism destination by analysing photographs' visual content with a computer deep learning model: The case of Beijing. *Tourism Management, 75*, 595-60.

Zhao, Z., Zhu, M., & Hao, X. (2018). Share the gaze: Representation of destination image on the Chinese social platform WeChat moments. *Journal of Travel & Tourism Marketing, 35*(6), 726–739. https://doi.org/10.1080/10548408.2018.1432449

Pragya Bhatt is a doctoral candidate at the School of Environment and Sciences, Griffith University, Australia. Her research interests include protected area management, tourism management, and seed dispersal and alien species invasion ecology.

Catherine Marina Pickering is a Professor, Researcher and Head of Discipline in Ecology and Evolution in the school of Environment and Science, Griffith University, Australia. Her research interests include ecology, tourism, and protected area management.