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Explaining viewer affect with imagery diagnosis model

Meng-Mei Chen *, Laura Zizka, Florent Girardin, Effie Ruiheng Zhang

Ecole hôtelière de Lausanne, HES-SO University of Applied Sciences and Arts Western Switzerland, Route de Cojonnex 18 / 1000, Lausanne 25, Switzerland

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ABSTRACT

Understanding the emotions of the photo audience or Viewer Affect is essential because marketers want to elicit specific responses with photos. Nevertheless, the relationship between Viewer Affect and tourists' behavioral intentions is still unclear. This research investigated Viewer Affect with association strengths and association valences of destination photos and statements and developed the Imagery Diagnosis Model as a new approach to synthesize findings. The Imagery Diagnosis Model recommends leveraging Treasures, developing Hidden Gems, ignoring Traps, and proceeding cautiously with Roadblocks. Furthermore, this research used the Destination Content Model to test the impact of Viewer Affect on travelers' behavioral intentions. Our findings suggest that Destination Affect positively influences willingness to visit, recommend, and pay. Destination marketers evoke Destination Affect with text or photos but use text to change Destination Image. This research collected 796 online responses from four countries and used the structural equation modeling to confirm the Destination Content Model.

1. Introduction

'A picture is worth a thousand potential visitors to a specific destination' is an adaptation of the adage that provides an accurate representation of the current phenomenon in today's tourism industry. Traditionally, tourists captured that perfect 'Kodak' moment to share with friends and family well after the vacation was over. Over the past decade, given the ubiquity of mobile phones and social media, tourists have become destination marketers through selfies and social media influencers by taking and sharing photos instantaneously. The widely accepted tourism concepts of tourist gaze (Urry, 1990) and the circle of representation (Jenkins, 2003) demonstrate the intrinsic link between tourism and photos (Garrod, 2009). Picture Superiority Effect states that, due to dual coding, people generally have better recall for photos than for words (Paivio & Csapo, 1973). Nevertheless, how do photos impact potential tourists' destination image and behavioral intentions such as willingness to visit, recommend, and pay?

Deng and Li (2018) differentiate perceptions from photo takers and photo audiences and name these perceptions as Publisher Affect and Viewer Affect, respectively. Publisher Affect is the cognitive image identified from titles, tags, and descriptions specified by the photo publishers, while Viewer Affect represents emotions embedded in the photo audience's comments (Deng & Li, 2018). As stated in Shannon and Weaver's model of communication (1949), in a communication process, a sender sends a message to a receiver, and the receiver decodes the message and provides a response. Accordingly, a Viewer Affect is a response to a decoded photo. Through the application of these definitions, most photo-related destination image research (e.g., Michaelidou, Siamagka, Moraes, & Micevski, 2013; Pan, Lee, & Tsai, 2014; Song & Kim, 2016; Stepchenkova & Zhan, 2013) have only addressed the projected image or the comparison between the projected and the perceived images, which are from publishers, not viewers. The perceived image represents what the tourists saw and decided to publish, hence, Publisher Affect, but did not provide information about Viewer Affect, which are the responses from the photo audience.

Furthermore, Viewer Affect, as a relatively new concept, was initially investigated by analyzing the comments written by the photo audience as shown in Deng and Li (2018). Photo audiences could share their emotions and responses in different formats, not limited to comments. Thus, understanding the Viewer Affect or the emotions of the photo audience is essential because marketers want to effectively and reliably elicit certain target emotions with photos (Deng & Li, 2018; Joyner, Kline, Oliver, & Kariko, 2018; Picazo & Moreno-Gil, 2019). Our project attempts to fill a gap in destination image research by examining destination images through the emotions elicited by the photos themselves and the emotional reaction to said photos in influencing tourists' intentions to visit a specific destination.

To understand the impact of Viewer Affect on tourists' destination

* Corresponding author.
E-mail addresses: Meng-Mei.Chen@ehl.ch (M.-M. Chen), Laura.Zizka@ehl.ch (L. Zizka), Florent.Girardin@ehl.ch (F. Girardin), Effie.Zhang2@ehl.ch (E.R. Zhang).

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image and behavioral intentions, the Destination Content Model (DCM) developed and tested by Kock, Josiassen, and Assaf (2016) seems to provide an ideal theoretical framework. Destination Image is one of the most popular research topics in Tourism, and numerous researchers have developed different models, including the attributes-holistic, functional-psychological, common-unique model developed by Echtner and Ritchie (1991); the cognitive-affective-conative image and image formation agents by Gartner (1993); the destination image formation model by Baloglu and McCleary (1999); the conceptual model developed by Gallarza, Saura, and García (2002); and Destination Branding model by Cai (2002).

However, many seminal researchers (Baloglu & McCleary, 1999; Gallarza et al., 2002; Josiassen, Assaf, Woo, & Kock, 2015; Lai & Li, 2016; Pike & Ryan, 2004; Tasci & Kozak, 2006) have criticized the definition of Destination Image as atheoretical and lacking a conceptual framework. To address this criticism, recently, both Lai and Li (2016) and Josiassen et al. (2015) proposed a new destination for Destination Image.

This research adopted the definition defined by Josiassen et al. (2015) and the DCM developed by Kock et al. (2016) because of the differentiation between Destination Imagery (DY) and Destination Image (DI), as well as the DCM framework could be used to explain the impact of Viewer Affect on audiences' behavioral intentions. The DCM also defines Destination Affect (DA) and depicts the relationships between DY, DA, DI, and tourists' behavioral intentions, including a willingness to visit (WTV), willingness to recommend (WTR), and willingness to pay (WTP).

Josiassen et al. (2015) and Kock et al. (2016) proposed the separation of DY and DI with the Imagery-Image Duality model. DY is defined as "an individual's diverse cognitive and affective associations relating to a destination", and could be both descriptive or evaluative, formative, and multi-dimensional (Josiassen et al., 2015; Kock et al., 2016, p. 32). DI is defined as "an individual's overall evaluative representation of a destination", and DI is evaluative, reflective, and single-dimensional (Josiassen et al., 2015; Kock et al., 2016, p. 31). Although DY was used as synonyms for DI by previous researchers (e.g., Garrod, 2009; Hunter, 2016), this new definition differentiates itself from DI as a separate construct and provides measurement guidance (the sum of the product of association strength and association valence). This DY definition aligns with the Spreading Activation (Collins & Loftus, 1975) or Associative Network Memory model in Psychology, Brand Knowledge (Keller, 1993), and Destination Branding (Cai, 2002).

It is essential to point out that a school of scholars (Araújo, Cardoso, Araújo, & Dias, 2019; Cardoso, Dias, de Araújo, & Marques, 2019; Cardoso, Vila, de Araújo, & Dias, 2020; Goossens, 2000; Kim, Kim, & Bolls, 2014; Kumar & Nayak, 2014; Lee & Gretzel, 2012; Macinnis & Price, 1987) defined Imagery as "a process (not a structure) by which sensory information is represented in working memory" (Macinnis & Price, 1987, p. 473). To measure Imagery, these scholars used various indicators, including vividness, quantity, valence, modality (Lee & Gretzel, 2012), heart rate to indicate attention, and skin conductance for arousal (Kim et al., 2014).

Macinnis and Price (1987) addressed the differences between these two schools of research. Macinnis and Price (1987) described, "Propositional theorists argue that knowledge is represented only as a set of verbal propositional network composed of nodes (representing concepts) and connected by links (representing relationships between concepts)" (p. 474). This concept is more aligned with scholars in Spreading Activation or Associative Network Memory, Brand Knowledge, and DY defined in Kock et al. (2016). On the other hand, Macinnis and Price (1987) defined Imagery as "a mode of processing information" and distinguished it from "information structure (knowledge storage)" (p. 474). Many tourism scholars have used the Imagery definition defined by Macinnis and Price (1987) (e.g., Araújo et al., 2019; Cardoso et al., 2019; Cardoso et al., 2020; Goossens, 2000; Kim et al., 2014; Kumar & Nayak, 2014; Lee & Gretzel, 2012), and please refer to Cardoso et al. (2019, p. 83–84) and Araujo et al. (2019, p. 155) for more discussions of DY as a memory processing model.

This research aimed to investigate the relationship between texts and photos associated with a destination and their impacts (Viewer Affect) on tourists' behavioral intention; hence, we adopted DY as defined by Kock et al. (2016).

To measure DY, Kock et al. (2016) started with a qualitative study collecting an array of distinct and accessible destination associations, followed by a quantitative survey measuring each association's strength and valence to the studied destination. Specifically, Association Strength (AS) was defined as "the subjective probability of a link between an association and the destination" and Association Valence (AV) was defined as "the subjective degree of positivity or negativity that an individual attaches to an association" (Kock et al., 2016, p. 36). Simultaneously measuring both AS and AV differed from previous research and overcame the "double denial" issues raised by previous researchers (Josiassen et al., 2015; Kock et al., 2016; Pike, 2016). In other words, measuring AS and AV affords researchers insights into the existence (or not) of an association to the destination and whether this association is positive or negative.

Because of Picture Superiority Effect, photos and texts may have different impacts on destination image and behavioral intentions. To understand the impact of photos on potential tourists' behavioral intentions, Viewer Affect (Deng & Li, 2018) and the DCM (Kock et al., 2016) provided the initial theoretical foundations. Viewer Affect was examined by analyzing comments and classifying these words into cognitive and affective images (Deng & Li, 2018). The AS and AV measurements proposed by Kock et al. (2016) served as an alternative method in understanding Viewer Affect. Indeed, this research operationalized Viewer Affect with ASs and AVs of destination photos. On the other hand, the impact of Viewer Affect on destination image and behavioral intentions was tested with the DCM. The DCM was tested with texts but not photos (Kock et al., 2016). Therefore, how photo-induced DY impacts the DCM and behavioral outcomes remain unknown. Nevertheless, these two theories complement each other and enhance the understanding of the impact of photos on tourists' behavioral intentions. The DCM served as the theoretical framework to understand the impact of Viewer Affect on DA, DI, and behavioral intentions, including a willingness to visit (WTV), willingness to recommend (WTR), and willingness to pay (WTP). By incorporating the Viewer Affect and measuring photo-induced DY, the DCM could be expanded to address photo-related destination research, one of the aims of this research project. As DCM is a relatively new concept in destination image research, the current research will test the DCM with a different destination, which could contribute to its validity, reliability, and generalizability.

Therefore, the aims of this research are threefold. The first research objective is to confirm the DCM with a novel destination, Switzerland. To achieve this research objective, we measured the ASs and AVs of textual or descriptive associations to represent text-induced DY and corresponding DA, DI, and behavioral intentions to confirm the DCM. The second research objective is to understand the impact of Viewer Affect on DA, DI, and behavioral intentions. This is achieved by measuring the Viewer Affect through the ASs and AVs of destination photos to represent photo-induced DY and test the impact of photo-induced DY on DA, DI, and behavioral intentions. The third research objective is to use the ASs and AVs of texts and photos to develop the Imagery Diagnosis model. This Imagery Diagnosis Model was inspired by Ansoff's Matrix (Ansoff, 1957), Importance-Performance Analysis (Martilla & James, 1977), and the Loyalty Strategy (Reinartz & Kumar, 2002). These models are constructed by two variables (e.g., product and market, importance and performance, potential profitability, and projected loyalty) and share a similar matrix of four quadrants. These models serve as diagnostic tools and provide suggestions specifically addressing four quadrants. The Imagery Diagnosis Model proposed by this research creates a matrix of four quadrants based on ASs and AVs of

text statements or photos and provides specific suggestions for texts and photos located in each quadrant.

This research advances the literature in three distinct ways. First, by empirically testing the DCM in a different context, this research contributes to the reliability, validity, and generalizability of DCM. Second, this research introduces photo-induced DY as a new variable to the DCM and expands the DCM application to photo-based destination image research by addressing the impact of Viewer Affect on DA, DI, and behavioral intentions. Furthermore, operationalizing Viewer Affect with ASs and AVs of photos provides a new method for photo-related research. Previous photo-related destination image research mainly conducted content analysis or semiotic analysis but rarely investigated photo audience responses. Even when researchers investigated photo audience responses, most researchers used a low number of photos or respondents. We demonstrate the feasibility of understanding Viewer Affect by measuring the ASs and AVs of photos and make a methodological contribution by introducing a new research angle to photo-related research. Third, by measuring ASs and AVs of associations to the destination, this research uncovers a new application of the findings of ASs and AVs and proposes a new model (i.e., the Imagery Diagnosis Model) that classifies associations into four quadrants, including 'Treasures', 'Hidden Gems', 'Traps', and 'Roadblocks'. The Imagery Diagnosis Model offers researchers and practitioners a tool to compare associations based on audience responses and, therefore, select associations, in the format of text or photos, more effectively to achieve marketing objectives. Indeed, marketing professionals need to understand the relationships between photo content and corresponding audience responses to identify the photo which could effectively and reliably evoke a target response (Deng & Li, 2018; Pan et al., 2014). Hence, the photo-based Destination Content Model's findings could better inform destination marketing organizations to understand the relationship between Viewer Affect, DA, DI, and behavioral intentions. We believe that the Imagery Diagnosis Model can help marketers better understand the audiences' responses (Viewer Affect) and optimize their marketing strategy.

2. Literature review

2.1. Destination content model

The DCM (Kock et al., 2016) includes three mental representations that people hold about a destination. These three representations consist of a multi-dimensional cognitive component DY, a single-dimensional affective component DA, and a single-dimensional evaluative component DI. Kock et al. (2016) provide definitions and the blueprint of the measurement of each of the three DCM components: DY is defined as "an individual's diverse cognitive and affective associations relating to a destination" DA is defined as "an individual's overall affect attributed to a destination" and DI is defined as "an individual's overall evaluative representation of a destination".

Previous researchers often measured affective image by utilizing the bi-polar items of pleasant-unpleasant, arousing-sleepy, relaxing-distressing, and exciting-gloomy (e.g., Baloglu & McCleary, 1999; Deng & Li, 2018; Kim & Stepchenkova, 2015). Kock et al. (2016) argued that the affective image is cognitive, and items used to measure affective image were affective descriptors. Kock et al. (2016) stated that "DA is a basic, universal, and psychologically irreducible experiential state of mind (Russell & Barrett, 1999), (that) has never been measured" (Kock et al., 2016, p. 33). Based on the feelings-as-information and integral affect concepts, Kock et al. (2016) argued that individuals have an overall affective response to a destination, which is DA. Hence, DA is similar to DI and is evaluative, reflective, and single-dimensional.

Based on empirical studies in Spain and Germany, Kock et al. (2016) showed that DY drives both DA and DI, and that DA drives DI. Furthermore, they suggested that both DA and DI influence behavioral intentions, including WTV, WTR, and WTP. However, they were not able to find support for all their hypotheses in both countries. For example, they found that DI drives WTP for vacations in Spain but not Germany and that DA drives all three behavioral intentions for Germany, but only WTV and WTR for Spain.

In the current research, we rely on the methodology used by Kock et al. (2016) to measure the different constructs. Furthermore, we extend it to the use of photos in addition to text.

2.2. Destination image photo research

Urry (1990) suggested that tourism itself is becoming a search for the photogenic and that travel is a strategy for collecting photos (Jenkins, 2003). Tourism researchers have used photos to understand tourists behaviors and perceptions, including the different perceptions between stakeholders (Balomenou & Garrod, 2014; Deng, Liu, Dai, & Li, 2019; Garrod, 2008; Hunter, 2016; Valek & Williams, 2018; Wang & Sparks, 2016), and the gap between the projected destination image and the perceived destination image (Mak, 2017; Michaelidou et al., 2013; Önder & Marchiori, 2017; Song & Kim, 2016; Stepchenkova, Kim, & Kirilenko, 2015; Stepchenkova & Zhan, 2013).

In terms of DI-related photo research, while researchers have employed both content analysis and semiotic analysis (Jenkins, 2003), content analysis was more widely adopted. Most research conducted content analysis by developing a coding scheme, manually coding photo content into different categories, and comparing the results between destination marketing organizations and user-generated content, or between residents and tourists (e.g., Donaire, Camprubí, & Galí, 2014; Garrod, 2008; Garrod, 2009; Hunter, 2016; Jenkins, 2003; Mak, 2017; Song & Kim, 2016; Stepchenkova et al., 2015; Stepchenkova & Zhan, 2013). Due to the time and resources required (Balomenou, Garrod, & Georgiadou, 2017), content analysis tends to be limited by the low number of photos, complex identification process and results in deviation (Park & Kim, 2018; Picazo & Moreno-Gil, 2019; Zhang, Chen, & Li, 2019). Besides, the researchers could choose to focus on searching for similarities instead of differences between photos and, inevitably, sacrifice the multi-facet nature of photos (Park & Kim, 2018; Picazo & Moreno-Gil, 2019). Furthermore, the advancement in artificial neural networks and image recognition technology could replace the manual coding process, and researchers such as Zhang et al. (2019) and Ma, Xiang, Du, and Fan (2018) have applied these techniques in tourism photo research (Picazo & Moreno-Gil, 2019). Counting on the frequencies of objects presented in photos is not the best use of the visual method, and there deems a different way of destination image research (Park & Kim, 2018; Picazo & Moreno-Gil, 2019). For this reason, we are proposing an innovative approach by measuring association strength and association valence of photos to better understand the impact of photos on destination image.

2.3. Viewer affect

Some researchers have investigated the effects of photos in a tourism context. The appealing elements of a photo are interpreted differently by various tourists (Ye & Tussyadiah, 2011). While the elements shown in photos are similar, the reasons for taking the photos could differ substantially between tourists and local residents (Balomenou & Garrod, 2014). The attractiveness, uniqueness, and texture afforded by photos help shape the destination image. People familiar with the destination tend to have a more holistic, psychological, and unique evaluation of the photos than people unfamiliar with the destination (MacKay & Fesenmaier, 1997). A high correlation exists between the likeability of the photo and the activities portrayed in the photo. However, a low correlation is witnessed between the liking of a photo and the corresponding eye movement (Wang & Sparks, 2016). Iconic destination photos evoke a higher likelihood to visit and recommend than generic destination photos (Litvin & Mouri, 2009). Compared to negatively framed photos, positively framed photos are likely to generate higher serotonin levels and dopamine levels and are more likely to stimulate behavioral

intentions (Moyle, Moyle, Bec, & Scott, 2019). These researchers explored the Viewer Affect evoked by photos but limited their research scopes with the number of respondents or the number of photos. The constraints in the number of respondents or the number of photos may result from data collection methods such as focus groups, interviews, experiments, or the commitment required from the participants.

Kim and Stepchenkova (2015) defined Manifest Content as explicit, observable, and can be recorded with a high degree of reliability, while Latent Content is implicit and requires researchers to interpret its presence through discourse analysis or semiotic analysis. Kim and Stepchenkova (2015) confirmed the relationship between Manifest Content and Latent Content. They found that latent affective attributes acting as partial mediators have a more decisive influence on the intention to visit than cognitive attributes. This research is critical as it investigated photo viewers' impressions for a large number of photos (200) reviewed by at least 53 people of the total 318 participants. This research also quantitatively tested the relationship between Manifest Content and Latent Content and popular destination image constructs, including cognitive image, affective image, and behavioral intentions.

On the other hand, Deng and Li (2018) and Deng et al. (2019) investigated Viewer Affect by analyzing photo comments and focused on adjectives. Affective comments are similar regardless of destination, yet the photo content to express them is localized (Deng & Li, 2018). Western and Eastern tourists differ in their cognitive image and affective image manifested in words used to express their impressions (Deng et al., 2019). This research relied on comments to investigate Viewer Affect. However, there should be other methods to study Viewer Affect, which we attempt to do in our current study.

The research reviewed in this section adopted traditional definitions of destination image, cognitive image, and affective image as Baloglu and McCleary (1999) defined. To the best of our knowledge, no researchers have applied the new definitions of DY, DA, DI, and the DCM developed by Kock et al. (2016) in photo-related destination image research. The current research attempts to fill this gap.

2.4. Research aims and hypotheses

Against this background, we aim to generalize the Destination Content Model with a different destination and using samples from four target market countries. Accordingly, we aim to test the following hypotheses, derived from the DCM:

H1. Text-induced DY positively relates to DA.

H2. Text-induced DY positively relates to DI.

H3. DA positively relates to DI.

H4. DA positively relates to tourist behavior, including WTV, WTR, and WTP.

H5. DI positively relates to tourist behavior, including WTV, WTR, and WTP.

The second aim is to understand the impact of Viewer Affect on tourists' behavioral intentions with the DCM framework. Hence, in addition to text-induced DY, this research investigates photo-induced DY. We thus make the following hypotheses, in line with the DCM:

H6. Photo-induced DY positively relates to DA.

H7. Photo-induced DY positively relates to DI.

H8. DA positively relates to DI.

H9. DA positively relates to tourist behavior, including WTV, WTR, and WTP.

H10. DI positively relates to tourist behavior, including WTV, WTR, and WTP.

3. Methodology

3.1. Switzerland as the destination

Tourism generated (direct) imports of CHF 16.4 billion in 2015, or 2.6% of the total gross value creation in the Swiss economy (Swiss Federal Council, 2018). Tourism is critical to Swiss employment, and 164,000 people (4.1% of all employees) work directly in the tourism industry (Swiss Federal Council, 2018). Nevertheless, Swiss tourism faces some structural challenges, including its fluctuating exchange rates between Switzerland and tourists' countries of origin and its high operations costs. Attractive landscapes, historic cities, and Switzerland's positive image have been identified as strengths of Swiss tourism, but these do not guarantee long-term sustainable tourism demand. The Swiss Confederation stated that "due to digitalization, tourism is becoming a supplier of exchangeable standard products with low margins" (Swiss Federal Council, 2018), and this is considered a threat. To ensure that Swiss tourism demand remains strong, it must be identified as a destination that cannot be exchanged nor substituted.

3.2. Phase 1 qualitative study

The research process included Phase 1 qualitative study and Phase 2 quantitative study. The process is presented in Fig. 1.

3.2.1. Data collection

To collect textual associations, we developed a questionnaire to gather keywords related to Switzerland as a travel destination (Kock et al., 2016; Li & Stepchenkova, 2012; Stepchenkova & Shichkova, 2017). Please refer to the Appendix A for the questions. In addition to this questionnaire, we also searched for content related to Switzerland on a travel guide website (e.g. Lonelyplanet.com) and the travel section of news websites (e.g. BBC.com, Swissinfo.org).

A separate question was used to collect photos (please see the Appendix A) in an online survey. We also downloaded 40 photos from the Instagram account VisitSwitzerland. This account belongs to a content marketing firm, and showcases Switzerland destination photos taken by Instagram photographers. The research team members - one Swiss and three long-term Switzerland residents - also added a total of 60 photos.

We distributed the questionnaire to three different audiences: Undergraduate students and staff at a Swiss University, and the LinkedIn connections of the lead researcher. The three online surveys took place in Spring and Fall 2019.

3.2.2. Data analysis

To identify the textual associations, we merged all survey answers and online content. The four research members read these texts and independently identified the most salient associations. Then, the research team reviewed all the salient associations and finally selected 23 associations among them.

To identify the photos associated with Switzerland, the research team merged all 283 photos, and each research team member evaluated the photos independently. The evaluation task consisted of two steps. Firstly, each member tagged each photo with at least one category (nature: natural landscapes and scenery, people: people doing activities, and manmade: manmade landmark or objects). Secondly, the research team individually rated the photos from 1 to 3 points. The evaluation results were combined, and the top 65 photos with the highest total points were selected. Two research members found similar photos on Adobe Stock Image to replace the original 65 photos to respect the intellectual property and copyrights.

We organized 65 photos into five packages (13 photos in each package) to avoid respondent fatigue. Within each package, we balanced photos with color tones (warm or cool) and seasons, and three themes (nature, people, and manmade), which were suggested by previous researchers (Joyner et al., 2018; Mackay & Fesenmaier, 1997; Ye

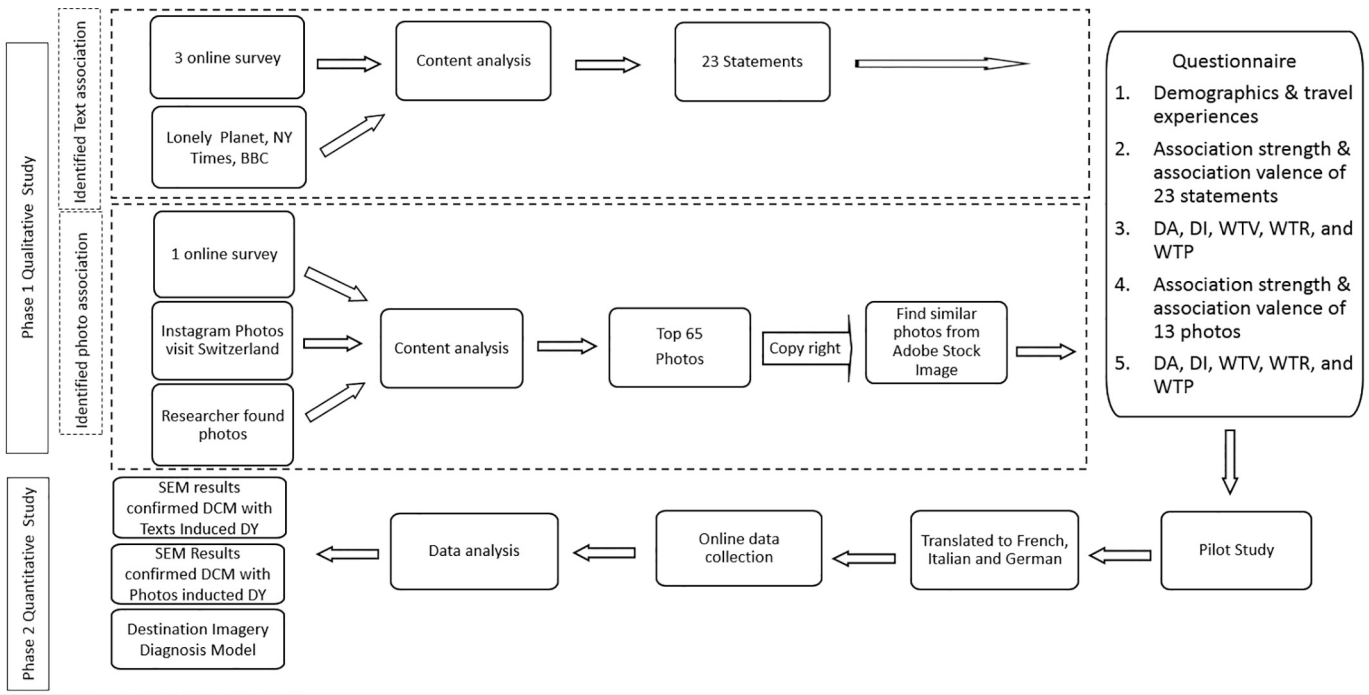

Fig. 1. Research process.

& Tussyadiah, 2011).

3.2.3. Survey instrument development

To confirm the DCM, we adopted the same measurements used in Kock et al. (2016) for AS, AV, DY, DA, DI, and behavioral intentions. We measured AS and AV for every statement and photo with these two questions: "How much do you relate / associate this statement (or photo) to Switzerland as a tourist destination?" and "For you as a potential tourist in Switzerland, would this photo be negative or positive?" AS was measured with a five-point Likert scale anchored from 1 (none at all) to 5 (a great deal). AV was measured with a seven-point Likert scale ranging from −3 (extremely negative) to +3 (extremely positive). DY is the product of AS and AV.

DA is measured with the question, "All things considered, how do you feel about Switzerland?" We used seven-point scale for like/dislike (pleasant/unpleasant, attractive/unattractive, and comfortable/uncomfortable). DI is measured with the question, "All things considered, taking a holiday in Switzerland is favorable/unfavorable (positive/negative, good/bad, and worthwhile/not worthwhile)," seven-point scale.

Behavior intentions include WTV, WTR, and WTP. WTV is measured with questions such as "It is very likely that I would choose Switzerland as my tourist destination," "I strongly intend to visit Switzerland in the next three years," "I would like to take a holiday in Switzerland," and "I would like to take a holiday in Switzerland." WTR is measured with questions such as "I talk up Switzerland as a holiday destination," "I bring up Switzerland in a positive way in conversations about a holiday destination," "In social situations, I often speak favorably about Switzerland as a tourist destination," and "I recommend Switzerland as a tourist destination to other people when asked." WTP is measured with questions including "I would continue to visit Switzerland even if the prices to go there were increased," "I would pay a higher price to visit Switzerland than to visit other countries," "I would be willing to spend more money for a holiday in Switzerland than for a similar holiday in most other countries," and "As a tourist, I would go to Switzerland even if it was more expensive than most other places." These WTV, WTR, and WTP-related questions were measured with a seven-point scale (strongly disagree to strongly agree), as used in Kock et al. (2016).

The survey instrument was arranged in the following order. First, the respondents answered questions about their travel experience and their demographics. Second, they evaluated the 23 statements in terms of AS and AV. Third, they responded to questions about DA, DI, and behavioral intentions. Fourth, the respondents evaluated 13 photos in terms of AS and AV. Finally, they specified DA, DI, and behavioral intentions again. We randomized the 23 statements and five photo packages, and 13 photos within each package.

The survey instrument was translated into French, Italian, and German. A research team member and a faculty member, both fluent in French and Italian, translated the French and Italian versions. The German version was translated by a professional translation agency and reviewed by two native German speakers. We distributed the survey instrument in four languages (English, German, French, and Italian).

3.3. Phase 2 quantitative study

In 2017, Switzerland Tourism decided that Europeans would remain their focused target market, as it is easier to build up customer loyalty with proximity (O'Sullivan, 2017). In 2018, the top arrival countries to Switzerland were Germany, the USA, China, the UK, France, and Italy (World Tourism Organization, 2019). For the current study, Germany, the UK, France, and Italy were chosen.

We used Prolific.co to recruit residents or nationals in Germany, the UK, France, and Italy. Prolific.co was selected instead of Amazon MTurk because Prolific participants are more naive and diverse but provide comparable data quality to MTurk (Peer, Brandimarte, Samat, & Acquisti, 2017). The respondents must have a Prolific.co approval rate of 90% or above. Every Prolific ID can only answer the survey once. We included attention check questions in the survey, and only respondents passing the attention check questions were retained for the subsequent analyses. The data collection took place in January 2020.

STATA14 was used first to confirm the DCM model with text-induced DY and secondly with photo-induced DY. Furthermore, to develop the Imagery Diagnosis Model, the means of individual AS and AV for every statement and photo, and the overall means of ASs and AVs for all statements and photos have been calculated.

4. Results

4.1. Respondents' profiles

The total number of respondents was 796. The respondents were predominantly aged between 18 and 39 years old, almost equal in gender distribution, and most have never been to Switzerland. Please see Table 1 for respondents' profiles.

4.2. Descriptive statistics

Table 2 displays the descriptive and reliability statistics for all measured constructs. Both text-induced DY and photo-induced DY scenarios confirm that respondents have positive destination imagery (131.72 and 92.4), high destination affect (5.83 and 5.9), and destination image (5.66 and 5.66).

4.3. SEM results text

The Destination Content Model was tested with structural equation modeling using STATA14. The results indicate that the model is a good representation of the data ($\chi^2(181) = 983.826$, $p = .000$; CFI = 0.938; TLI = 0.928; RMSEA = 0.075; SRMR = 0.072). All measurement scales demonstrate appropriate reliability characteristics: Cronbach's alpha of every measurement scale is above 0.7 (Nunnally, 1978), all Average Variance Extracted (AVE) are above 0.5 (Fornell & Larcker, 1981), all Composite Reliabilities (CR) are above 0.6 (Bagozzi & Yi, 1988), and all factor loadings are significant ($p < .01$; Bagozzi, Yi, & Phillips, 1991). Fig. 2 presents the SEM results with text-induced DY, the DCM, and behavioral intentions.

With regard to structural paths, the results show that DY positively influences DA ($\gamma = 0.68$; $p < .001$) and DI ($\gamma = 0.09$; $p = .008$). DA also positively influences DI ($\gamma = 0.83$; $p < .001$). Concerning the effects on tourists' behavioral intentions, DA positively relates to WTV ($\gamma = 0.40$; $p < .001$), WTR ($\gamma = 0.36$; $p = .003$), and WTP ($\gamma = 0.38$; $p = .001$), while DI positively influences WTV ($\gamma = 0.44$; $p < .001$) and WTR ($\gamma = 0.26$; $p = .036$), but does not affect WTP ($\gamma = 0.15$; $p = .169$). Overall, with the exception of the effect of DI on WTP, all structural paths are significant and in the right direction, as predicted by the DCM. Hence, we were able to generalize the original model proposed by Kock et al. (2016) to another sample and another destination (i.e. Switzerland). We also confirm H1, H2, H3, H4, but partially support H5 that DI positively relates to tourist behavior, including WTV, WTR, but not WTP.

4.4. SEM results photos

We used the same procedure to test the DCM with photos instead of text descriptions. The results indicate that the model is a good representation of the data. Goodness-of-fit indices are even slightly better: ($\chi^2(181) = 881.401$, $p = .000$; CFI = 0.956; TLI = 0.949; RMSEA = 0.070; SRMR = 0.071). All measurement scales demonstrate appropriate reliability characteristics: Cronbach's alpha of every measurement scale is above 0.7 (Nunnally, 1978), all Average Variance Extracted (AVE) are above 0.5 (Fornell & Larcker, 1981), all Composite Reliabilities (CR) are above 0.6 (Bagozzi & Yi, 1988) and all factor loadings are significant ($p < .01$; Bagozzi et al., 1991). Fig. 3 presents the SEM results with photo-induced DY, the DCM, and behavioral intentions.

With regard to the structural paths, the results show that DY positively influences DA ($\gamma = 0.60$; $p < .001$) but does not significantly influence DI ($\gamma = -0.013$; $p = .645$). The latter suggests that photos of a destination are more effective in influencing emotions than attitudes towards a destination. Similarly, previous research in advertising have also suggested that, when dealing with a positively motivated behavior, photos elicit emotions better than informational content (Percy & Rosenbaum-Elliott, 2016). Further, as predicted by the DCM, DA positively influences DI ($\gamma = 0.92$; $p < .001$). Concerning the effects on tourists' behavioral intentions, DA positively relates to WTV ($\gamma = 0.52$; $p < .001$), WTR ($\gamma = 0.52$; $p < .001$), and WTP ($\gamma = 0.49$; $p < .001$), while DI positively influences WTV ($\gamma = 0.29$; $p = .003$), but does not affect WTR ($\gamma = 0.07$; $p = .589$) nor WTP ($\gamma = 0.04$; $p = .720$). The lack of significant effects of DI on WTR and WTP after being exposed to photos of a destination suggests that there is no indirect effect of DA on behavioral intentions through DI. If destination photos are not effective in influencing tourists' attitude towards it, it is not surprising that DI, which has been formed by seeing destination photos, is not driving a tourist behavioral intentions. Overall, our results support the hypotheses H6 - photo-induced DY positively influences DA; H8 - DA positively

Table 1
Respondents' profiles.

Gender	Number	%
Male	404	50.8%
Female	392	49.2%
Age		
18–29 years old	476	59.8%
30–39 years old	183	23.0%
40–49 years old	73	9.2%
50–59 years old	46	5.8%
60–69 years old	18	2.3%
Previous travel experience		
Never been to Switzerland	469	58.9%
Once	181	22.7%
More than once	146	18.3%

Table 2
Descriptive and reliability statistics.

	M	SD	Cronbach's alpha	Composite Reliability	AVE
Text-induced DY, DA, DI, and Behavioral Intentions					
Text AS[a]	3.39	0.49	N/A	N/A	N/A
Text AV[b]	1.44	0.50	N/A	N/A	N/A
Destination Imagery DY [c]	131.72	56.05	N/A	N/A	N/A
Destination Affect DA [d]	5.83	0.81	0.91	.97	.99
Destination Image DI [d]	5.66	0.90	0.75	.97	.99
Willingness to visit WTV [d]	5.24	1.25	0.88	.97	.99
Willingness to recommend WTR [d]	4.49	1.29	0.91	.98	.99
Willingness to pay WTP [d]	3.21	1.34	0.91	.97	.99
Photo-induced DY, DA, DI, and Behavioral Intentions					
Photo AS [a]	3.45	0.65	N/A	N/A	N/A
Photo AV [b]	1.72	0.72	N/A	N/A	N/A
Destination Imagery DY [c]	92.40	43.68	N/A	N/A	N/A
Destination Affect DA [d]	5.90	0.82	0.90	.97	.99
Destination Image DI [d]	5.66	0.93	0.78	.97	.99
Willingness to visit WTV [d]	5.22	1.35	0.90	.97	.99
Willingness to recommend WTR [d]	4.64	1.40	0.94	.98	.99
Willingness to pay WTP [d]	3.19	1.49	0.95	0.99	0.99

[a] AS is measured with a five-point Likert scale anchored from 1 (not at all) to 5 (strongly associated).
[b] AV was measured with a seven-point Likert scale ranging from −3 (strongly negative) to +3 (strongly positive).
[c] DY = the sum of AS*AV.
[d] This variable was measured with a seven-point Likert scale ranging from 1 to 7.

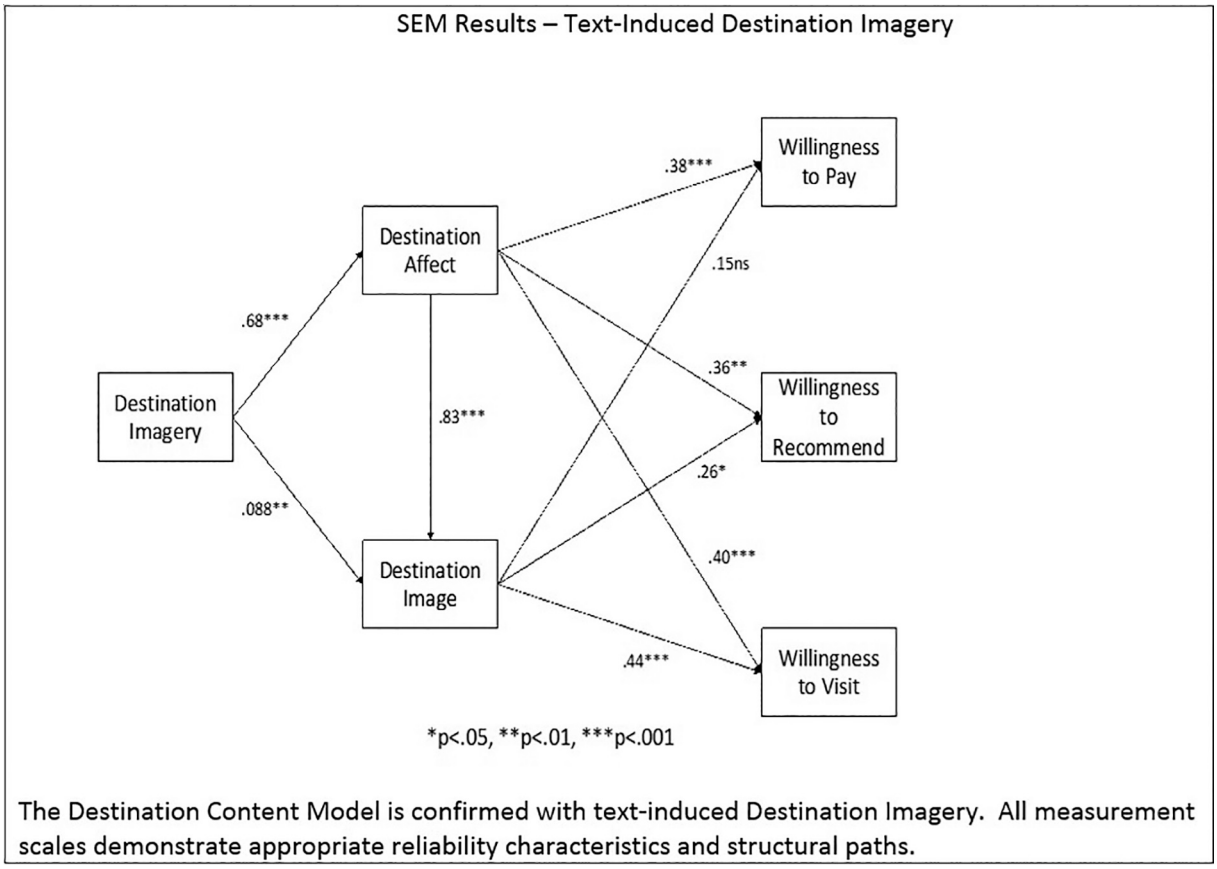

Fig. 2. The SEM results for texts-induceed Destination Imagery.

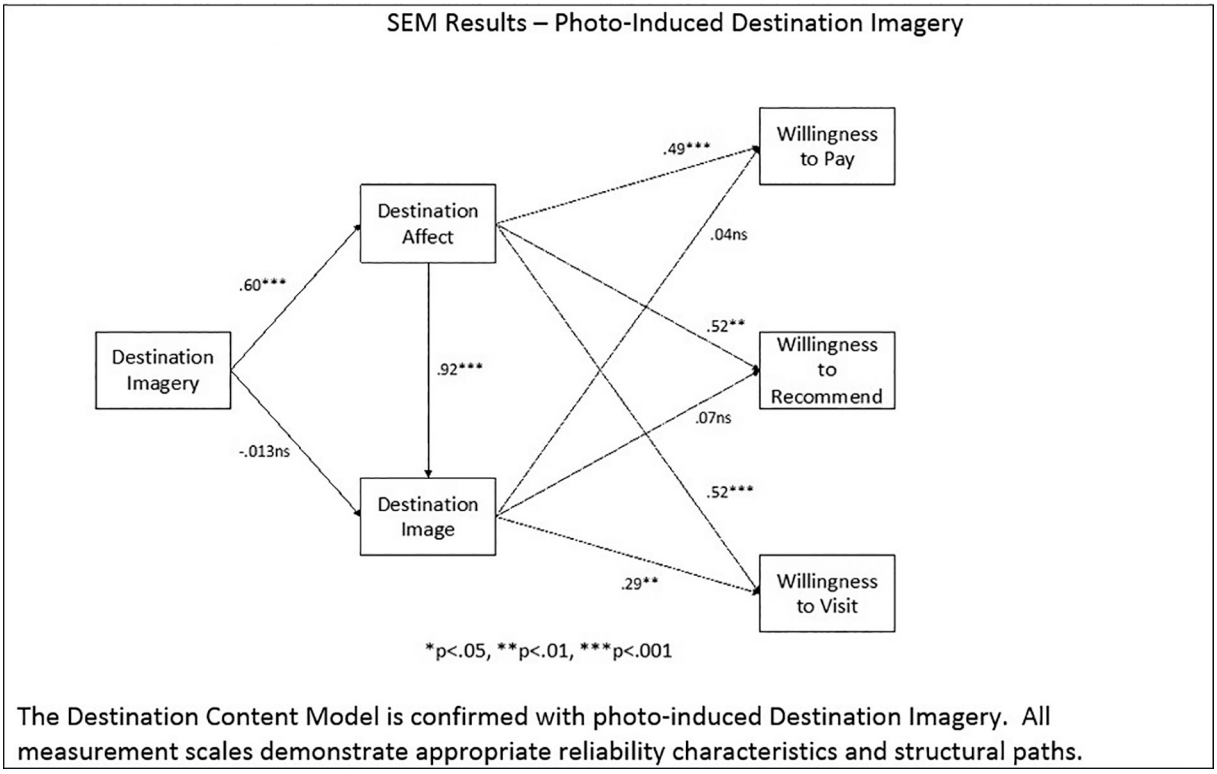

Fig. 3. The SEM results with photos-induced Destination Imagery.

influences DI; and H9 - DA positively influences behavioral intentions. Our results partially support H10 - DI positively influences WTV, but not WTR nor WTP; however, the results do not support H7 - photo-induced DY positively influences DI.

5. Discussion

5.1. The impacts of text and photos on tourists behavioral intentions

This research aims to confirm and use the DCM to explore the impact of Viewer Affect on tourists' behavioral intentions. To achieve these aims, this research adopted the same definitions and measurements from Kock et al. (2016), measured both text-induced DY and photo-induced DY, and confirmed the DCM with both sets of data. As demonstrated in Fig. 3, the impact of Viewer Affect on tourists' behavioral intentions includes the significant relationships between DY and DA, DA and DI, and DA and behavioral intentions (WTV, WTR, WTP), while the relationship between DY and DI is not significant. Specifically, the impact of Viewer Affect on DA seems to mediate its impact on DI fully; hence, no significant relationship was established between DY and DI. Moreover, we found the relationships between DY and DI and between DI and WTR were significant in the text scenario but not in the photo scenario. Previous researchers found people have better recall with photos than words (Paivio & Csapo, 1973), and photos are better than informational content to evoke emotions (Percy & Rosenbaum-Elliott, 2016). This research adds additional evidence of the different impacts of text and photos.

By comparing our results with those obtained by Kock et al. (2016), we identified several interesting findings. Firstly, together with Kock et al. (2016), this research confirms the relationships between DY and DA, DA and DI, and DA and behavioral intentions (WTV, WTR, and WTP) in both text and photo scenarios. These findings address previous researchers' call (Deng & Li, 2018; Picazo & Moreno-Gil, 2019) to investigate tourist emotions evoked by photos and tourist behavior.

Secondly, the relationship between DY and DI has been confirmed in the text scenario but not in the photo scenario. These findings remind researchers of the critical importance of testing and confirming existing theories and raise more questions about how photos influence DI. Our findings suggest that people use different mechanisms to process text and photos, and, consequently, the resulted imagery impacts DA and DI differently. In the tourism industry, photos are commonly used to stimulate emotions and attitudes. However, our findings show a lack of relationship between photo-induced DY and DI, indicating that photos do not impact attitudes towards a destination. More research is needed to confirm the lack of relationship between photo-induced DY and DI potentially by exploring boundary conditions.

Thirdly, the relationships between DI and WTV and between DI and WTR have been confirmed in the text scenario of this research and other research (Afshardoost & Eshaghi, 2020; Josiassen et al., 2015; Kock et al., 2016). Nonetheless, this research cannot confirm the relationship between DI and WTR in the photo scenario; thus, future studies could be conducted to understand the lack of relationship between DI and WTR in the photo scenario.

While our results provide empirical support for a positive relationship between DA and WTP, they cannot confirm the relationship between DI and WTP in both text and photo scenarios. This differs from Kock et al.'s (2016) study, which confirmed a relationship between DA and WTP for Germany but not Spain, and between DI and WTP for Spain but not Germany. Based on these findings, maybe the relationships between DA and WTP and between DI and WTP can be country-specific. It would be interesting to investigate if the type of country or location (Northern vs. Southern) plays a moderating role.

Afshardoost and Eshaghi (2020) investigated the relationship between destination image and several behavioral intentions (WTR, WTV, and willingness to revisit) but omitted WTP. WTP is a better indicator of commitment than WTV or WTR (Kock et al., 2016). Given that Switzerland is perceived as an expensive destination, understanding WTP drivers is critical to Swiss tourism. Previous researchers have investigated WTP for eco-friendly destinations and found travelers who seek out eco-friendly products and destinations have a higher willingness to pay for them (Amendah & Park, 2008). Price sensitivities of tourism demand vary considerably between destinations (Mangion, Durbarry, & Sinclair, 2005). More research is needed to understand the relationships between DA and WTP and between DI and WTP.

Overall, DA is more effective than DI in influencing WTV, WTR, and WTP. Destination marketing organizations should evoke DA, rather than DI, to develop these behavioral intentions as both text and photos could evoke DA. On the other hand, destination marketing organizations will rely on text to change DI.

5.2. Understanding viewer affect with AS and AV

Given the vital role of photos in tourism promotion, understanding Viewer Affect is critical for destination marketing. Measuring the ASs and AVs of photos opens a new avenue for Viewer Affect research. The association strength is cognitive by nature, while the association valence measures the attitude. The combination of AS and AV provides more insights as strong associations do not always equate to positive attitudes. Some famous or iconic tourist attractions are strongly associated with both a specific destination and a negative attitude. For example, casinos are strongly associated with Las Vegas and with a negative attitude towards gambling. Popular attractions such as the Eiffel Tower are associated with Paris but also perceived as touristy. Hence, researchers and marketers need to consider both AS and AV.

AS and AV are not location-specific; thus, they could be applied to different destinations. Previous research developed coding schemes for content analysis, and their findings were destination-specific and almost impossible to compare. Consequently, researchers have advocated developing a framework to measure and compare destination images between destinations (Picazo & Moreno-Gil, 2019; Stepchenkova & Zhan, 2013). By measuring ASs and AVs, researchers no longer need the coding schemes and could be free from the limitation of the number of photos. In our research, each of 65 photos has been evaluated by at least 157 persons (package 1: 157; package 2: 161; package 3: 160; package 4: 157; package 5: 161). The possibility of investigating a large number of photos and collecting responses from a large audience is particularly interesting for practitioners who want to effectively design destination marketing campaigns. Furthermore, AS and AV offer ample opportunities to compare different photos, compare Viewer Affect between different audiences, and track changes in Viewer Affect, which previous researchers advocated, such as Picazo, Moreno-Gil, and Gursoy (2019).

Measuring photos' AS and AV offers another advantage. Respondents themselves holistically evaluate the photos rather than the components included in the photo. This approach could better reflect the multifaceted nature of photos and allow researchers to explore the ability to move (to access and arouse deep emotion) and prove (to raise the awareness of minor details captured) in photos advocated by Picazo and Moreno-Gil (2019) and Balomenou and Garrod (2019). Finally, researchers and marketers could assess the mental representation of Destination Imagery (DY) constructed through a more significant number of photos.

Built on the Viewer Affect concept introduced by Deng and Li (2018), this research expands the View Affect research by analyzing photo audiences' comments (Deng & Li, 2018) to understand photo audiences' evaluation. This research introduces quantitative measures of association strength and association valence as a new approach to understanding Viewer Affect and addresses the call to have less qualitative but more quantitative photo research (Balomenou et al., 2017; Park & Kim, 2018). We identified numerous benefits from this new approach and confirmed the relationship between Viewer Affect, the DCM, and behavioral intentions.

5.3. Imagery diagnosis model

Based on our research findings, we have developed the Imagery Diagnosis Model (See Fig. 4), which will help marketers to make better decisions. Our model is inspired by Ansoff's Matrix (Ansoff, 1957), the Importance Performance Analysis (Martilla & James, 1977), and the Loyalty Strategy (Reinartz & Kumar, 2002) models, which use a similar grid to synthesize their findings. The Imagery Diagnosis Model can be used with text and photos. We will explain the Imagery Diagnosis Model with photos as examples, but researchers could analyze associations in text or photos with the Imagery Diagnosis Model.

We calculated the means of AS and AV for each photo and all photos. We used the means of AS and AV of all photos as the intercept between X-axes (AV) and Y-axes (AS) and constructed a grid with four quadrants. The photos with means higher than the overall means of AS and AV are located in Quadrant One, called "Treasures." The photos with their AS means lower than the overall AS mean, but AV means higher than the overall mean are located in Quadrant Two, called "Hidden Gems." Quadrant Three, called 'Traps,' consists of the photos with AS means and AV means lower than the overall AS and AV means. Finally, the photos with AS means higher than the overall AS mean, but AV means lower than the overall AV mean are located in Quadrant Four: "Roadblocks." Fig. 4 presents the Imagery Diagnosis Model.

The Imagery Diagnosis Model can help marketers make better-informed decisions based on the photo's location in the different quadrants. Specifically, marketers should leverage photos located in Quadrant One, i.e., "Treasures," as audiences perceive these photos as strongly associated with the destination and have a positive attitude towards them. For photos located in Quadrant Two, i.e., "Hidden Gems," the respondents have a positive attitude but perceive a weaker association to the destination. Hence, marketers should enhance the association between the photo and the destination. Respondents perceive photos located in Quadrant Three, i.e., "Traps," as less associated with the destination and have a less favorable or even negative attitude towards them. Hence, marketers should avoid using those photos in their communication campaigns. Respondents perceive photos located in Quadrant Four, i.e., "Roadblocks", as strongly associated with the destination but have less positive or even negative attitude towards these photos. Therefore, marketers should handle those photos with caution. We present the Imagery Diagnosis Model for photos and text in Figs. 5 and 6.

Out of 65 photos, four were presented in Fig. 5 as examples for the Imagery Diagnosis Model. Switzerland is famous for its beautiful mountains and lakes. However, three mountain-related photos received different ASs and AVs and consequently were located in different quadrants. In Fig. 6, we see how this same process was done with text. For example, the majority of the text falls into the category of 'Treasures' which is a positive finding for destination marketing. It would be judicious to limit or avoid text that falls into the categories of the 'Traps' in Quadrant 3 (i.e., festivals and carnivals or specific city names) or the "Roadblocks' in Quadrant 4 (i.e., expensive and money/bank). Instead, marketers should focus on the 'Treasures' and the 'Hidden Gems.' An interesting observation is the photo located in Quadrant Three in Fig. 5 is a typical folk band seen in most festivals and carnivals in Switzerland. The respondents had a weak association and less positive or even negative attitude towards it. This is confirmed by the fact that the statement related to festivals and carnivals in Fig. 6 is also located in Quadrant 3.

This research aims to understand the Viewer Affect and propose measuring association strengths and association valences of photos as a new method for photo-related destination research. In 5.2, the benefits of measuring AS and AV to understand Viewer Affect have been addressed. The Imagery Diagnosis Model augments the benefits of measuring AS and AV by providing a simple method to analyze and synthesize findings from ASs and AVs.

Researchers and practitioners can understand the Viewer Affect by measuring the ASs and AVs of a large number of photos from a large sample and use the Imagery Diagnosis to analyze and present the findings. Furthermore, researchers and practitioners can compare or track the changing Viewer Affect by comparing the Imagery Diagnosis Models created for different target markets or created in different time periods. For instance, this research has collected responses from four countries and presented the aggregate Imagery Diagnosis Model. However, an Imagery Diagnosis model can be created for each of the four markets to understand the Viewer Affect of that country better and develop targeted marketing strategies.

Identifying and strengthening the most relevant associations to a destination is not a new concept in destination research. Based on the Associative Network Memory model, Keller (1993) defined brand knowledge as consisting of a brand node in memory to which various

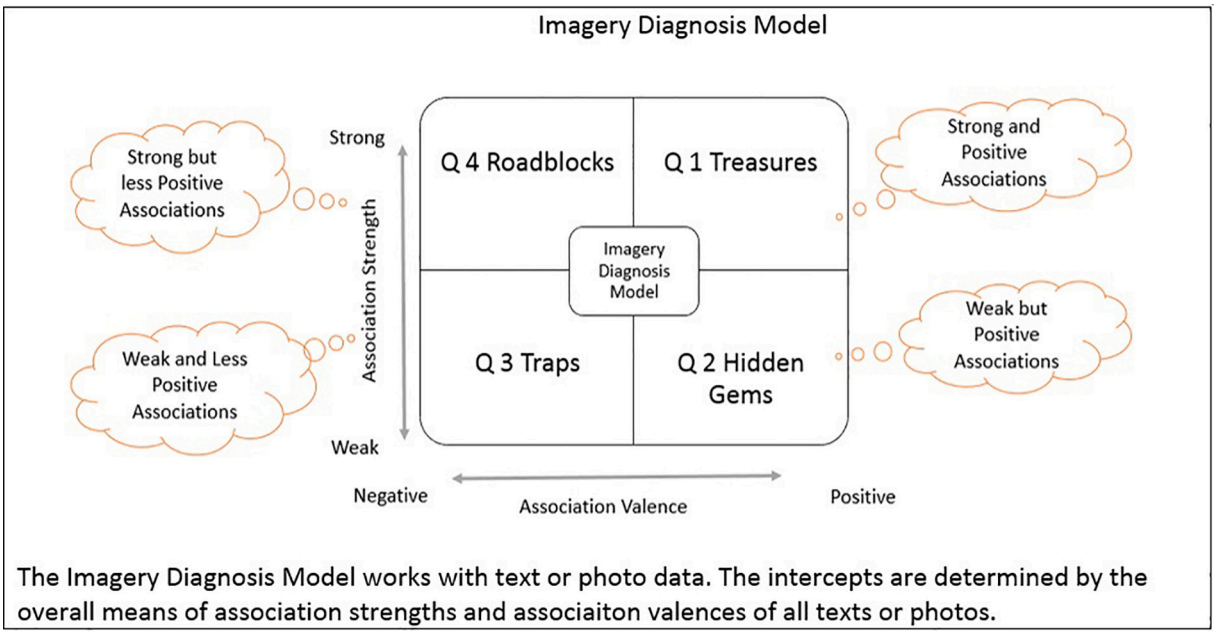

Fig. 4. The Imagery Diagnosis Model.

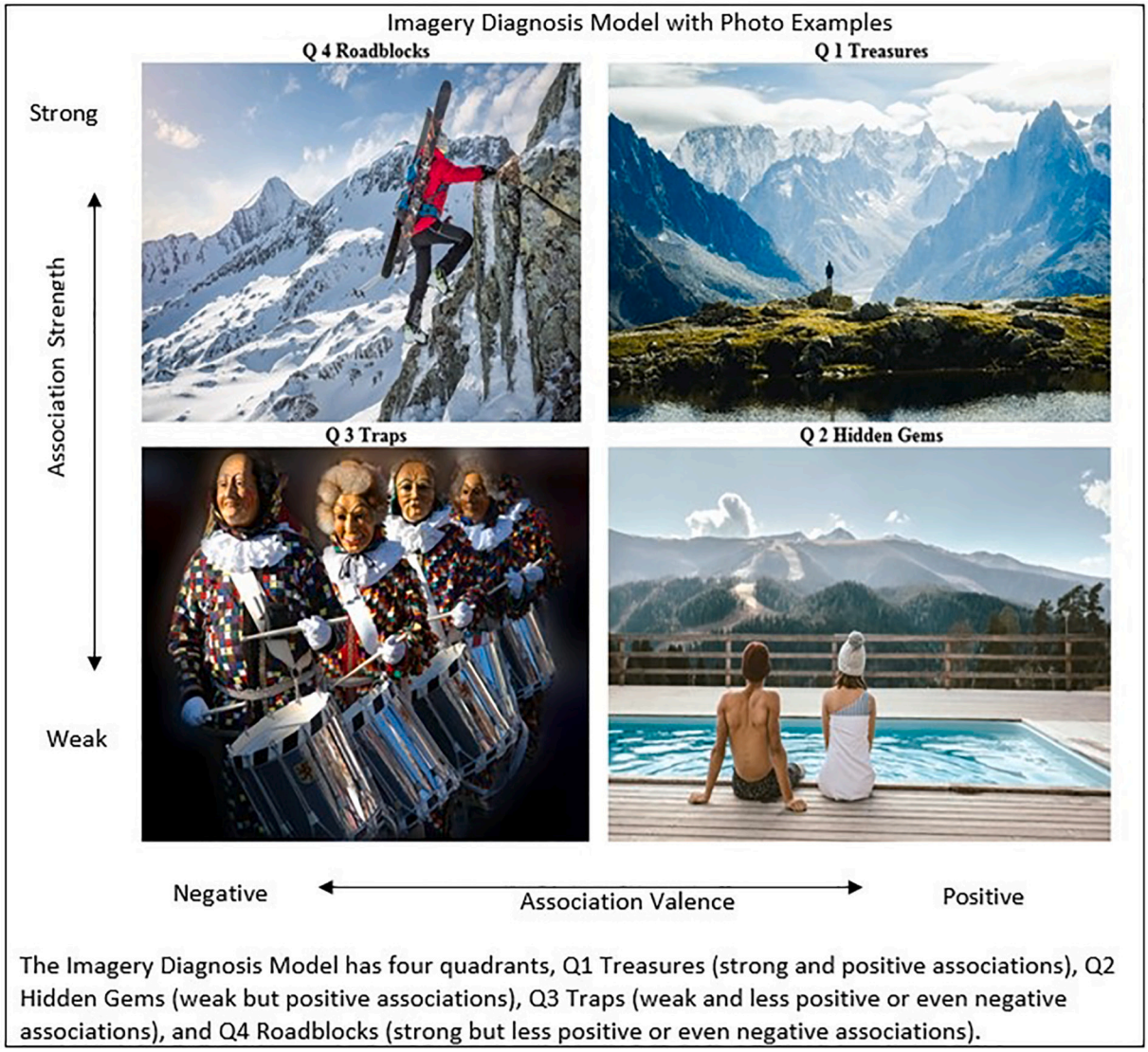

Fig. 5. Imagery Diagnosis Model with Photo Examples.

associations are linked, and brand image as perceptions about a brand as reflected by the brand associations held in consumer memory. Brand associations are informational nodes linked to the brand node in memory and contain the brand's meaning for consumers (Keller, 1993).

Rooted in the Associative Network Memory and the spreading activation, Cai (2002) defined a destination brand image as "perceptions about the place as reflected by the associations held in tourist memory (p. 723)". These memory nodes could be verbal, visual, or abstract (Cai, 2002). Accordingly, building a destination brand image amounts to identifying the most relevant associations and strengthening their linkage to the destination (Cai, 2002). Cai's Destination Brand Image definition has been used in destination branding research (e.g. Li & Stepchenkova, 2012; Stepchenkova & Li, 2012; Tasci & Kozak, 2006). However, previous researchers mainly focused on identifying associations. Our proposal of the Imagery Diagnosis Model, which is derived from the destination imagery concept of DCM (Kock et al., 2016) and is rooted in branding (Keller, 1993) and destination branding (Cai, 2002) theories, contribute to the research in destination brand image by identifying associations, measuring association strengths and association valences, and proposing corresponding marketing strategies. Furthermore, the Imagery Diagnosis applies the findings from association strengths and associations valence, which represent Viewer Affect, and could be considered as a new approach to understanding Viewer Affect.

6. Conclusion, limitations and recommendations

6.1. Conclusion

Our research contributes to the DCM's generalizability by showing that DCM is an appropriate model to analyze DY's effects, influenced by an exposition to destination photos or textual associations, on tourists' behavioral intentions. Indeed, except for the antecedent (DY in the photo scenario) and effects (WTR in the photo scenario and WTP in both text and photo scenarios) of DI, all structural paths are positive and significant, as predicted by the model. More interestingly, DA seems to play a central role in understanding the effect of a text statement or a photo on a tourist's behavioral intentions.

The impact of Viewer Affect on travelers' intentions can be explained as follows: The relationships between Viewer Affect and DA, DA and DI, and DA and behavioral intentions are significant. However, there is no significant relationship between Viewer Affect and DI. According to our study and in line with previous research in advertising (Percy & Rosenbaum-Elliott, 2016), destination photos seem to trigger emotions (i.e., DA) rather than attitudes (i.e., DI). Then, in turn, emotions towards a destination influence DI. The process according to which DA influences

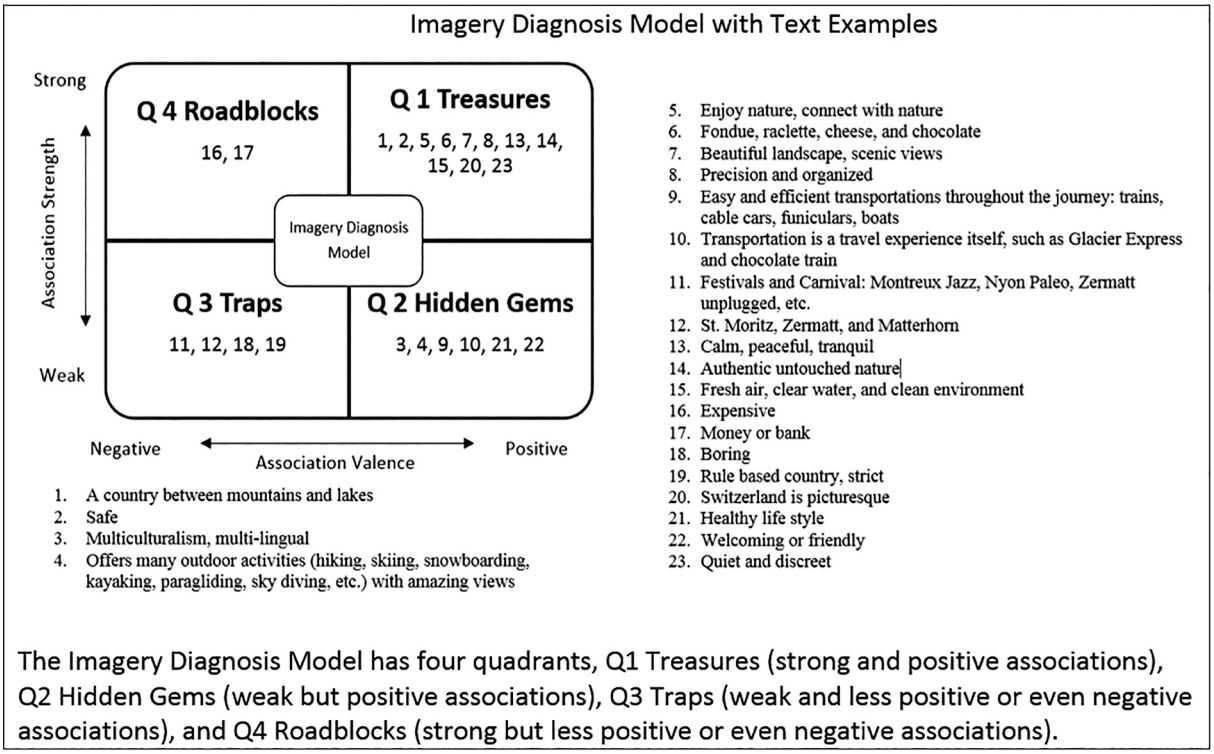

Fig. 6. Imagery Diagnosis Model with Text Examples.

DI has been documented before (Kock et al., 2016). Our results confirm this and suggest that DA, induced by photos, can fully mediate DY's effect on DI such that DY has no significant direct effect on DI. In other words, destination photos do not directly impact DI in consumers' minds. Destination features explained by text or infographics may be better suited for that purpose, as our text scenario results demonstrate (see Fig. 2). However, destination photos can be effective in creating positive emotions about a destination, which may, in turn, result in positive DI.

Our research contributes to tourism literature theory and methodology by confirming the DCM, expanding the DCM with photo-induced DY, explaining the impact of Viewer Affect on behavioral intentions through the DCM, and introducing the measurements of association strength and association valence to photo-related tourism research in order to understand Viewer Affect better. Additionally, we have proposed the Imagery Diagnosis Model to further analyze and use the findings from ASs and AVs from both text and photo associations and contribute to the understanding of Viewer Affect.

Our research also has implications for practitioners. We believe that our findings related to the different impacts of text versus photos on DA, DI, and behavioral intentions are particularly relevant for touristic destination marketers. Indeed, our findings suggest that to promote a destination, marketers can use photos and text to influence DA effectively but should instead use text to improve DI in the tourists' eyes. Furthermore, the Imagery Diagnosis Model provides marketers with a tool to analyze the association strengths and association valences of specific photos or statements and develop better-informed marketing strategies based on the findings. Concretely, we encourage marketers to conduct the Destination Imagery Diagnosis model with a representative sample, and leverage Treasures, develop Hidden Gems, ignore Traps, and proceed cautiously with Roadblocks.

6.2. Research limitations and recommendations

Our primary research limitation is that we used the same respondents to test both text-induced DY and photo-induced DY, the DCM, and behavioral intentions. Our research was designed first to confirm the DCM model with text-induced DY and then test its application to photo-induced DY. We used a within-subject design to minimize the possible variances created by external factors. Also, our respondents are mainly in the age group of 19–39 (82.8%). Future research could further test the DCM model with both texts and photo data, using different samples. Another limitation is that to have the legal right to distribute the photos in the online survey, photos collected in Phase 1 were replaced with photos from Adobe Stock Image. Even though Adobe Stock Image provides an extensive range of photos, this research team made some subjective judgments when replacing the photos, which could be considered a research limitation.

In our research, we measured text-induced DY and photo-induced DY separately. However, marketers tend to use a combination of text and photos in their communication messages. Therefore, research that tests the DCM with a combination of text and photos could further expand this model's use. Also, we investigated only one destination, Switzerland. The lack of relationship between DI and WTP reported in our findings could be partially attributed to Switzerland's reputation of being an expensive destination. Therefore, we encourage more research with different destinations to further investigate the link between DI and WTP.

Measuring association strength and association valence offers researchers a scalable method to quantitatively evaluate a large number of photos with a large number of respondents. This method is not location-specific and could be applied to different destinations. However, this method still cannot overcome the challenge of comparing multiple destinations, an issue raised by previous researchers (Picazo & Moreno-Gil, 2019; Stepchenkova & Zhan, 2013). Although this issue is beyond our study's scope, we encourage researchers to develop scalable quantitative methods to compare photos between multiple destinations.

Our last recommendation is related to the untapped potential for applying visual research methods in tourism (Balomenou et al., 2017; Garrod, 2008). We propose measuring association strength and association valence of photos to understand Viewer Affect. Moyle et al. (2019) asked participants to indicate levels of emotions when they view photos

and use Lovheim's Cube of emotion to estimate the level of monoamine neurotransmitter. Balomenou et al. (2017) introduced canonical variate analysis to tourism photo research. Wang and Sparks (2016) used eye-tracking to monitor visual attention. Park and Kim (2018) advocated investigating photographic content such as color, light, text, texture, shape, and composition. Furthermore, researchers have investigated photos and associated metadata containing rich information about the users, temporal information, and geographic locations (e.g., Donaire et al., 2014; Donaire, Galí, & Gulisova, 2020; Giglio, Bertacchini, Bilotta, & Pantano, 2019; Ma et al., 2018; Ma, Kirilenko, & Stepchenkova, 2020; Önder, 2017; Vu, Li, Law, & Ye, 2015; Zhang et al., 2019). Tourism research favors textual data over photos, and tourism photo researchers prefer qualitative over quantitative research methods (Balomenou & Garrod, 2019; Park & Kim, 2018). However, the power of photos to prove and move makes photos valuable research data (Balomenou & Garrod, 2019). We introduce the measurements of AS and AV of photos to understand Viewer Affect and the Imagery Diagnosis Model to lay the groundwork for a new method of photo-related tourism research that can be built upon in future studies.

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Declaration of Interest Statement

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tmp.2021.100814.

References

Afshardoost, M., & Eshaghi, M. S. (2020). Destination image and tourist behavioural intentions: A meta-analysis. *Tourism Management, 81*, 104154. https://doi.org/10.1016/j.tourman.2020.104154.

Amendah, E., & Park, J. (2008). Consumer involvement and psychological antecedents on eco-friendly destinations: Willingness to pay more. *Journal of Hospitality & Leisure Marketing, 17*(3–4), 262–283. https://doi.org/10.1080/10507050801984859.

Ansoff, H. I. (1957). Strategies for diversification. *Harvard Business Review, 35*(5), 113–124. https://www.casrilanka.com/casl/images/stories/2017/2017_pdfs/sab_portal/course_material/strategies_for_diversification.pdf.

Araújo, A., Cardoso, L., Araújo, N., & Dias, F. (2019). Understanding the role of destination imagery in mountain destination choice. Evidence from an exploratory research. *European Journal of Tourism Research, 22*, 151–165. https://ejtr.vumk.eu/index.php/about/article/view/381.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74–94. https://doi.org/10.1007/bf02723327.

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly, 36*(3), 421–458. https://doi.org/10.2307/2393203.

Baloglu, S., & McCleary, K. W. (1999). A model of destination image formation. *Annals of Tourism Research, 26*(4), 868–897. https://doi.org/10.1016/s0160-7383(99)00030-4.

Balomenou, N., & Garrod, B. (2014). Using volunteer-employed photography to inform tourism planning decisions: A study of St David's peninsula, Wales. *Tourism Management, 44*, 126–139. https://doi.org/10.1016/j.tourman.2014.02.015.

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.

Balomenou, N., Garrod, B., & Georgiadou, A. (2017). Making sense of tourists' photographs using canonical variate analysis. *Tourism Management, 61*, 173–179. https://doi.org/10.1016/j.tourman.2017.02.010.

Cai, L. A. (2002). Cooperative branding for rural destinations. *Annals of Tourism Research, 29*(3), 720–742. https://doi.org/10.1016/s0160-7383(01)00080-9.

Cardoso, L., Dias, F., de Araújo, A. F., & Marques, M. I. A. (2019). A destination imagery processing model: Structural differences between dream and favourite destinations. *Annals of Tourism Research, 74*, 81–94. https://doi.org/10.1016/j.annals.2018.11.001.

Cardoso, L., Vila, N. A., de Araújo, A. F., & Dias, F. (2020). Food tourism destinations' imagery processing model. *British Food Journal, 122*(6), 1833–1847. https://doi.org/10.1108/BFJ-08-2018-0557.

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82*(6), 407–428. https://doi.org/10.1037/0033-295X.82.6.407.

Deng, N., & Li, X. R. (2018). Feeling a destination through the "right" photos: A machine learning model for DMOs' photo selection. *Tourism Management, 65*, 267–278. https://doi.org/10.1016/j.tourman.2017.09.010.

Deng, N., Liu, J., Dai, Y., & Li, H. (2019). Different cultures, different photos: A comparison of Shanghai's pictorial destination image between east and west. *Tourism Management Perspectives, 30*, 182–192. https://doi.org/10.1016/j.tmp.2019.02.016.

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.

Donaire, J. A., Galí, N., & Gulisova, B. (2020). Tracking visitors in crowded spaces using zenith images: Drones and time-lapse. *Tourism Management Perspectives, 35*, 100680. https://doi.org/10.1016/j.tmp.2020.100680.

Echtner, C. M., & Ritchie, J. B. (1991). The meaning and measurement of destination image. *Journal of Tourism Studies, 2*(2), 2–12. https://doi.org/10.1177/004728759303100402.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*(3), 382–388. https://doi.org/10.2307/3150980.

Gallarza, M. G., Saura, I. G., & García, H. C. (2002). Destination image: Towards a conceptual framework. *Annals of Tourism Research, 29*(1), 56–78. https://doi.org/10.1016/S0160-7383(01)00031-7.

Garrod, B. (2008). Exploring place perception a photo-based analysis. *Annals of Tourism Research, 35*(2), 381–401. https://doi.org/10.1016/j.annals.2007.09.004.

Garrod, B. (2009). Understanding the relationship between tourism destination imagery and tourist photography. *Journal of Travel Research, 47*(3), 346–358. https://doi.org/10.1177/0047287508322785.

Gartner, W. C. (1993). Image formation process. *Journal of Travel & Tourism Marketing, 2*(2–3), 191–216. https://doi.org/10.1300/J073v02n02_12.

Giglio, S., Bertacchini, F., Bilotta, E., & Pantano, P. (2019). Using social media to identify tourism attractiveness in six Italian cities. *Tourism Management, 72*, 306–312. https://doi.org/10.1016/j.tourman.2018.12.007.

Goossens, C. (2000). Tourism information and pleasure motivation. *Annals of Tourism Research, 27*(2), 301–321. https://doi.org/10.1016/S0160-7383(99)00067-5.

Hunter, W. C. (2016). The social construction of tourism online destination image: A comparative semiotic analysis of the visual representation of Seoul. *Tourism Management, 54*, 221–229. https://doi.org/10.1016/j.tourman.2015.11.012.

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

Josiassen, A., Assaf, A. G., Woo, L., & Kock, F. (2015). The imagery–image duality model: An integrative review and advocating for improved delimitation of concepts. *Journal of Travel Research, 55*(6), 789–803. https://doi.org/10.1177/0047287515583358.

Joyner, L., Kline, C., Oliver, J., & Kariko, D. (2018). Exploring emotional response to images used in agritourism destination marketing. *Journal of Destination Marketing & Management, 9*, 44–55. https://doi.org/10.1016/j.jdmm.2017.10.004.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing, 57*(1), 1–22. https://doi.org/10.1177/002224299305700101.

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.

Kim, S. B., Kim, D. Y., & Bolls, P. (2014). Tourist mental-imagery processing: Attention and arousal. *Annals of Tourism Research, 45*, 63–76. https://doi.org/10.1016/j.annals.2013.12.005.

Kock, F., Josiassen, A., & Assaf, A. G. (2016). Advancing destination image: The destination content model. *Annals of Tourism Research, 61*, 28–44. https://doi.org/10.1016/j.annals.2016.07.003.

Kumar, V., & Nayak, J. K. (2014). The measurement & conceptualization of destination personality. *Tourism Management Perspectives, 12*, 88–93. https://doi.org/10.1016/j.tmp.2014.09.002.

Lai, K., & Li, X. (2016). Tourism destination image: Conceptual problems and definitional solutions. *Journal of Travel Research, 55*(8), 1065–1080. https://doi.org/10.1177/0047287515619693.

Lee, W., & Gretzel, U. (2012). Designing persuasive destination websites: A mental imagery processing perspective. *Tourism Management, 33*(5), 1270–1280. https://doi.org/10.1016/j.tourman.2011.10.012.

Li, X., & Stepchenkova, S. (2012). Chinese outbound tourists' destination image of America: Part I. *Journal of Travel Research, 51*(3), 250–266. https://doi.org/10.1177/0047287511410349.

Litvin, S. W., & Mouri, N. (2009). A comparative study of the use of "iconic" versus "generic" advertising images for destination marketing. *Journal of Travel Research, 48*(2), 152–161. https://doi.org/10.1177/0047287509332332.
Ma, S. D., Kirilenko, A. P., & Stepchenkova, S. (2020). Special interest tourism is not so special after all: Big data evidence from the 2017 great American solar eclipse. *Tourism Management, 77*, 104021. https://doi.org/10.1016/j.tourman.2019.104021.
Ma, Y., Xiang, Z., Du, Q., & Fan, W. (2018). Effects of user-provided photos on hotel review helpfulness: An analytical approach with deep leaning. *International Journal of Hospitality Management, 71*, 120–131. https://doi.org/10.1016/j.ijhm.2017.12.008.
Macinnis, D. J., & Price, L. L. (1987). The role of imagery in information processing: Review and extensions. *Journal of Consumer Research, 13*(4), 473–491. https://doi.org/10.1086/209082.
MacKay, K. J., & Fesenmaier, D. R. (1997). Pictorial element of destination in image formation. *Annals of Tourism Research, 24*(3), 537–565. https://doi.org/10.1016/s0160-7383(97)00011-x.
Mak, A. H. (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.
Mangion, M. L., Durbarry, R., & Sinclair, M. T. (2005). Tourism competitiveness: Price and quality. *Tourism Economics, 11*(1), 45–68. https://doi.org/10.5367/0000000053297202.
Martilla, J. A., & James, J. C. (1977). Importance-performance analysis. *Journal of Marketing, 41*(1), 77–79. https://doi.org/10.1177/002224297704100112.
Michaelidou, N., Siamagka, N. T., Moraes, C., & Micevski, M. (2013). Do marketers use visual representations of destinations that tourists value? Comparing visitors' image of a destination with marketer-controlled images online. *Journal of Travel Research, 52*(6), 789–804. https://doi.org/10.1177/0047287513481272.
Moyle, B. D., Moyle, C. L., Bec, A., & Scott, N. (2019). The next frontier in tourism emotion research. *Current Issues in Tourism, 22*(12), 1393–1399. https://doi.org/10.1080/13683500.2017.1388770.
Nunnally, J. C. (1978). An overview of psychological measurement. In *Clinical diagnosis of mental disorders* (pp. 97–146). Boston, MA: Springer. https://doi.org/10.1007/978-1-4684-2490-4_4.
Önder, I. (2017). Classifying multi-destination trips in Austria with big data. *Tourism Management Perspectives, 21*, 54–58. https://doi.org/10.1016/j.tmp.2016.11.002.
Önder, I., & Marchiori, E. (2017). A comparison of pre-visit beliefs and projected visual images of destinations. *Tourism Management Perspectives, 21*, 42–53. https://doi.org/10.1016/j.tmp.2016.11.003.
O'Sullivan, D. (2017). Switzerland's tourism conundrum. Retrieved from https://www.swissinfo.ch/eng/attracting-crowds_switzerland-s-tourism-conundrum/43201358.
Paivio, A., & Csapo, K. (1973). Picture superiority in free recall: Imagery or dual coding? *Cognitive Psychology, 5*(2), 176–206. https://doi.org/10.1016/0010-0285(73)90032-7.
Pan, S., Lee, J., & Tsai, H. (2014). Travel photos: Motivations, image dimensions, and affective qualities of places. *Tourism Management, 40*, 59–69. https://doi.org/10.1016/j.tourman.2013.05.007.
Park, E., & Kim, S. (2018). Are we doing enough for visual research in tourism? The past, present, and future of tourism studies using photographic images. *International Journal of Tourism Research, 20*(4), 433–441. https://doi.org/10.1002/jtr.2194.
Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology, 70*, 153–163. https://doi.org/10.1016/j.jesp.2017.01.006.
Percy, L., & Rosenbaum-Elliott, J. R. (2016). *Strategic advertising management* (5th ed.). Oxford University Press.
Picazo, P., & Moreno-Gil, S. (2019). 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.
Picazo, P., Moreno-Gil, S., & Gursoy, D. (2019). Analysis of the projected image of tourism accommodations: A methodological proposal. *International Journal of Contemporary Hospitality Management, 31*(8), 3325–3351. https://doi.org/10.1108/ijchm-05-2017-0276.
Pike, S. (2016). Destination image: Identifying baseline perceptions of Brazil, Argentina and Chile in the nascent Australian long haul travel market. *Journal of Destination Marketing & Management, 5*(2), 164–170. https://doi.org/10.1016/j.jdmm.2015.12.006.
Pike, S., & Ryan, C. (2004). Destination positioning analysis through a comparison of cognitive, affective, and conative perceptions. *Journal of Travel Research, 42*(4), 333–342. https://doi.org/10.1177/0047287504263029.
Reinartz, W., & Kumar, V. (2002). The mismanagement of customer loyalty. *Harvard Business Review, 80*(7), 86–94. Retrieved from https://hbr.org/2002/07/the-mismanagement-of-customer-loyalty.
Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology, 76*(5), 805–819. https://doi.org/10.1037//0022-3514.76.5.805.
Shannon, C. E., & Weaver, W. (1949). *The mathematical theory of communication.* University of Illinois Press.
Song, S. G., & Kim, D. Y. (2016). A pictorial analysis of destination images on pinterest: The case of Tokyo, Kyoto, and Osaka, Japan. *Journal of Travel & Tourism Marketing, 33*(5), 687–701. https://doi.org/10.1080/10548408.2016.1167384.
Stepchenkova, S., Kim, H., & Kirilenko, A. (2015). Cultural differences in pictorial destination images: Russia through the camera lenses of American and Korean tourists. *Journal of Travel Research, 54*(6), 758–773. https://doi.org/10.1177/0047287514535849.
Stepchenkova, S., & Li, X. (2012). Chinese outbound tourists' destination image of America: Part II. *Journal of Travel Research, 51*(6), 687–703. https://doi.org/10.1177/0047287512451137.
Stepchenkova, S., & Shichkova, E. (2017). Country and destination image domains of a place: Framework for quantitative comparison. *Journal of Travel Research, 56*(6), 776–792. https://doi.org/10.1177/0047287516663320.
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.
Swiss Federal Council. (2018). Tourism strategy of the Swiss Confederation. (2018). Retrieved from www.seco.admin.ch/tourism.
Tasci, A. D., & Kozak, M. (2006). Destination brands vs destination images: Do we know what we mean? *Journal of Vacation Marketing, 12*(4), 299–317. https://doi.org/10.1177/1356766706067603.
Urry, J. (1990). The consumption' of tourism. *Sociology, 24*(1), 23–35. https://doi.org/10.1177/0038038590024001004.
Valek, N. S., & Williams, R. B. (2018). One place, two perspectives: Destination image for tourists and nationals in Abu Dhabi. *Tourism Management Perspectives, 27*, 152–161. https://doi.org/10.1016/j.tmp.2018.06.004.
Vu, H. Q., Li, G., Law, R., & Ye, B. H. (2015). Exploring the travel behaviors of inbound tourists to Hong Kong using geotagged photos. *Tourism Management, 46*, 222–232. https://doi.org/10.1016/j.tourman.2014.07.003.
Wang, Y., & Sparks, B. A. (2016). An eye-tracking study of tourism photo stimuli: Image characteristics and ethnicity. *Journal of Travel Research, 55*(5), 588–602. https://doi.org/10.1177/0047287514564598.
World Tourism Organization. (2019). Yearbook of Tourism Statistics dataset [Electronic], UNWTO, Madrid, data updated on 23/07/2019. Retrieved from https://www.unwto.org/data.
Ye, H., & Tussyadiah, I. P. (2011). Destination visual image and expectation of experiences. *Journal of Travel & Tourism Marketing, 28*(2), 129–144. https://doi.org/10.1080/10548408.2011.545743.
Zhang, K., Chen, Y., & Li, C. (2019). Discovering the tourists' behaviors and perceptions in a tourism destination by analyzing photos' visual content with a computer deep learning model: The case of Beijing. *Tourism Management, 75*, 595–608. https://doi.org/10.1016/j.tourman.2019.07.002.

Meng-Mei Chen is an Assistant Professor of Marketing at Ecole hotelière de Lausanne, Switzerland. She is a Ph.D. from University of Surrey, the UK. Her research interests are hotel distribution channel marketing, customer decision making process, marketing strategy, and destination marketing. Her research work has been published in leading tourism and hospitality journals. She actively engages in various tourism sectors through delivering executive education, serving as a keynote speaker in international conferences, and publishes in trade journals.

Laura Zizka has been teaching Business Communication, Academic Writing, and Crisis/Strategic Communication to undergraduate and graduate students at an international hospitality management school in Switzerland for the past 18 years. She has presented papers at education, hospitality, and management conferences and published papers on various communications topics linked to both higher education and the workplace. Her main research areas include communications, higher education, hospitality management, Science, Technology, Engineering, and Maths (STEM) education, and Corporate Social Responsibility (CSR)/sustainability actions, initiatives, and reporting. She is also interested in the gaps between the skills attained in higher education and the workplace.

Florent Girardin is an Assistant Professor of Marketing at EHL. Florent obtained a PhD from HEC Lausanne. Florent's academic research focuses on consumers' reactions to brand and product positioning strategies. In his doctoral dissertation, he has investigated consumers' perceptions of brand authenticity, a marketing concept that has gained increasing attention in the marketing discipline, both from academics and practitioners. His research integrates different perspectives from philosophy, sociology and psychology to better understand the mechanisms underlying consumers' formation of attitude towards brands and products. Florent's work has been published in Journal of Consumer Psychology and Psychology and Marketing.

Effie Ruiheng Zhang is an Academic Assistant in Marketing at Ecole hotelière de Lausanne, Switzerland. She is an honors graduate from Ecole hotelière de Lausanne who specialised in Branding communications and Customer Relationship Management including crisis communications, brand storytelling and luxury brand management. She actively manages research projects including destination marketing, chat bot implementation, smart technology and digital marketing. She contributes to research projects with her quantitative and qualitative data analytical skills.