

Destinations analytics with massive tourist-generated content: Applying the Communication-Persuasion Paradigm*

Hlee, Sun-Young** · Ham, Ju-Yeon*** · Chung, Nam-Ho****

〈Contents〉	
I. Introduction	III. Research methodology
II. Literature review and hypotheses development	3.1 Data collection
2.1 Travel recommender system as a social actor	3.2 Descriptive analysis
2.2 Communication-persuasion paradigm	IV. Results
2.3 The impact of message factor and context factor in TRS	V. Conclusions
	5.1 Summary and discussion
	5.2 Implications and limitations
	References
	<Abstract>

I. Introduction

Due to the fast development of Information Communication Technology (ICT), more and more online consumer review websites (i.e., Yelp and TripAdvisor) have allowed consumers to exchange their opinions about products and services (Hlee et al., 2018b; Hong et al., 2018; Kim et al., 2011; Le et al.,

2017). These online consumer review websites are defined as expert Recommender Systems (RSs), which are considered a valuable tool to help to reduce information overload for consumers (Gavalas et al., 2014). An RS compares user profiles to present item recommendations through their information filtering systems (Adomavicius et al., 2005). Recently, Travel Recommender Systems

* This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea(NRF-2016S1A3A2925146)

** College of Hotel and Tourism Management, Kyung Hee University, onoonee@gmail.com

*** College of Hotel and Tourism Management, Kyung Hee University, juyeon.ham@khu.ac.kr

**** Department of Hotel Management, Kyung Hee University, nhchung@khu.ac.kr, Corresponding author

(TRSs) have been increasingly utilized. One of the prominent fields of application of RSs is the smart tourism destination domain, where travel-related websites like TripAdvisor allow consumers to post Online Tourism Reviews (OTRs) of various travel-related items (e.g., hotels, restaurants, destination and attraction) and travel products/services to help potential consumers make a decision when planning a trip. For instance, TripAdvisor provides useful information about tourism destinations, attractions, products and services that are likely to be of interest to the consumer.

Obviously, an RS that incorporates the function of recommending helpful online reviews would be much more helpful and convenient than one that does not and thus would be likely to attract more potential consumers. From the tourism perspective, OTRs consist of many persuasive cues that have been identified as influential in other contexts, including heuristic and systematic cues. However, most of the previous studies have focused on the impacts of heuristic cues, such as review length, star rating, identity disclosure, and the expertise and reputation level of the reviewer, on review helpfulness (e.g., Liu and Park, 2015; Mudambi and Schuff, 2010). Baek et al., 2012) examined the impacts of information on review content, including the proportion of negative words as a systematic cue and product types as a context cue.

To date, researchers have considered heuristic rather than systematic cues of OTRs to be critical in a tourism context, since travel has conventionally been regarded as a hedonic and affective form of consumption. However, due to the multi-dimensional aspect of tourism, utilitarian motivation and cognitive advertising also might be precursors of consumer decision-making (Byun and Jang, 2015; Gallarza and Saura, 2006). For instance, tourists may choose to travel in order to acquire knowledge about foreign culture or history, purchase items that are rare or less expensive than in the home country, or receive medical services.

From the Communication-Persuasion Paradigm (CPP; O'Keefe, 2002) perspective, a recommendation is persuasive when it causes a change in attitude or behavior (Yoo et al., 2012). Previous literature proposes that consumers tend to accept recommendations when persuasive cues are displayed in the persuasion process (Yoo et al., 2012). Persuasive cues refer to the extent to which a recommendation includes (1) its source, (2) its form and content, (3) its user and his/her characteristics and (4) contextual factors (O'Keefe, 2002). These elements are interrelated in the communication-persuasion process. This study applied the CPP perspective to investigate the impacts of content factors and contextual factors on user persuasion based on the TRS context. In this

study, content factors refer to review message content (affective vs. cognitive), while contextual factors refer to two types of destinations (hedonic vs. utilitarian) and attractions (hedonic vs. utilitarian).

Therefore, the aims of this study are (1) to examine the impact of review language style (affective vs. cognitive) on review helpfulness and (2) to examine the moderating effects of the types of attractions (hedonic vs. utilitarian) in the relationship between review content (affective vs. cognitive) and helpfulness in online attraction reviews. Specifically, the current study examines the moderating effect of the type of attractions. Although a large number of research has explored the effect of review content on review helpfulness, they rarely paid attention to attraction reviews. Further little research has shed light on the moderating effect between review language and attraction type.

II. Literature review and hypotheses development

2.1 Travel recommender system as a social actor

2.1.1 Media equation theory and computers-as-social-actors

According to Fogg et al. (2002), computers are utilized in three basic ways: as tools, as

media, and as social actors. Based on the media equation theory, individuals' interactions with computers and new media are basically natural and social. It seems that computer-mediated communication and technologies act as independent social sources (or actors), just like human-to-human interactions in real life. According to the media equation, the consumer automatically adopts the same social rules when they interact with social networking sites (e.g., Facebook, Twitter) or recommender systems (e.g., TripAdvisor and DieToRecs). Several prior studies have identified the social response theory and the computers-as-social-actors (CASA) paradigm (e.g., Sundar and Nass, 2000; Sundar, 2004) as the basis for this phenomenon. They also posit that people apply a number of social rules when interacting with computer-mediated communication that possesses human characteristics or social cues (Sundar and Nass, 2001). In addition to computers, other studies have applied social response theory to the website context by arguing that a website can be an independent social actor (e.g., Wakefield et al., 2011). Wakefield et al. (2011) empirically found that perceived website socialness led to the enjoyment and had a strong influence on user intentions.

2.1.2 Tourism recommendation systems

Putting media equation theory in the RS perspective, Xiao and Benbasat (2007, p. 137)

defined RS as “software agents that elicit the interests and/or preferences of individual users for products, either explicitly (by asking) or implicitly (by mining the user online activity) and make recommendations accordingly”. Recently, RS studies have also supported the CASA paradigm and argued that consumers applied social rules and unconsciously interact with RSs (Gretzel and Fesenmaier, 2006; Yoo et al., 2012; Wang and Benbasat, 2005). Therefore, the social cues of RSs need to be deeply understood. In this regard, the media equation theory might be a proper theoretical foundation for such research. The social role of RSs has continuously been proposed. Zanker et al. (2006) asserted that interaction with RSs should be explored from a social and emotional perspective, rather than a technical perspective. Wang and Benbasat (2005) demonstrated that RS users perceived human characteristics, such as benevolence and integrity, when they interacted with an online recommender agent. Consequently, RSs need to be examined as persuasive communication sources in the context of human-to-human, human-to-computer, and human-to-recommender system interactions.

In smart tourism environments, due to the proliferation of online information, the role of TRSs has increasingly been regarded as crucial. TRSs are applications implemented through travel-related sources that suggest tourism products/services (e.g., attractions and

destinations), points of interest and events or provide tourist packages. The main objective of TRSs is to offer ease of use of the travel information process for travelers and to persuade them of the acceptableness of the proposed products/services (Gavalas et al., 2014).

Consumers often retrieve and accept travel recommendations that are implicitly or explicitly gathered or inferred in accordance with user preferences to reduce information overload (Gretzel, 2004). Since TRSs (e.g., TripAdvisor, DieToRecs, Heracles) represent one of the fastest growing-sources of travel recommendations, even more studies have explored the many cues that have been defined as crucial in other contexts (Ayeh et al., 2013; Yoo and Gretzel, 2011).

2.1.3 Persuasive cues in Tourism Recommender Systems

The fundamental assumption of these communication studies is that credible sources are more effective and persuasive than they are not. Yoo and Gretzel (2011) noted the importance of source characteristics on RS evaluations. The source characteristics can be classified into two categories: heuristic cues (i.e., non-content cues), such as identity of information sources, credibility of sources, or other opinions of the audience (Miller et al., 1976) and systematic cues, which focus on the message content itself. Thus, in the systematic

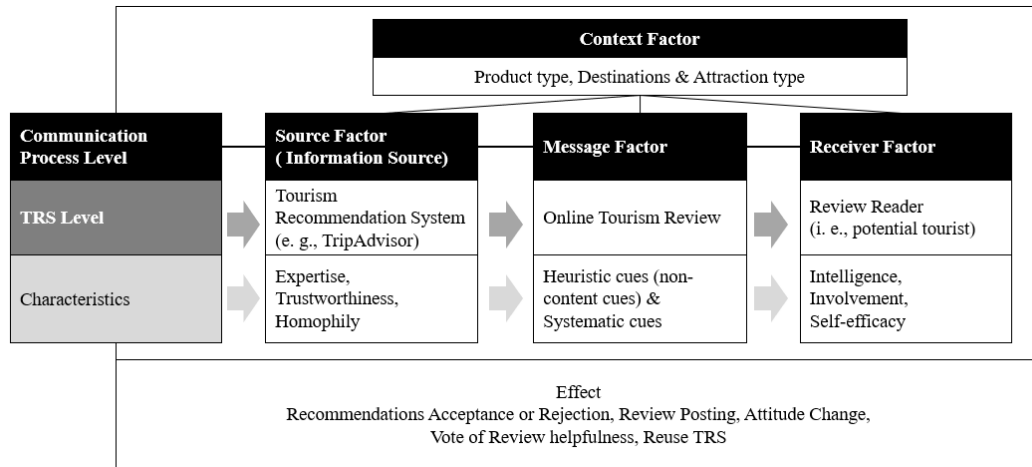
cue context, the content of the information and the manner in which it is presented are important in the communication process. According to Yoo and Gretzel (2011), “style of speech” and “humor” are associated with the communicator’s message content factor; in other words, they are systematic cues. Ayeh et al. (2013) empirically examined online tourists’ perceptions of the credibility of TRS sources (i.e., TripAdvisor and DieToRecs). They also explored the relationships among homophily (independent variable), trustworthiness and expertise (moderators), and tourist’s attitude and intentions (dependent variables) toward TRS utilization in the travel planning. Baek et al. (2012) examined the impacts of information on review content, including the proportion of negative words as a systematic cue and product types as a context cue. Lee and Yang (2015) also explored the effect of the degree of disconfirmation and referencing of a review message as systematic cues based on the heuristic-systematic model. Liu and Park (2015) examined review readability as a content-related (systematic) cue. However, although these previous studies have focused on systematic cues of online review, many RS studies have still focused on only the impact of heuristic cues such as star rating; reviewer’s expertise, identity disclosure and reputation within RS studies (Hlee et al., 2018a).

As noted in previous studies, TRSs include various persuasive cues. Tourism

recommendations are associated with a variety of products (e.g., destinations, attractions, accommodations), since tourism experiences are much more complex and high-risk than many other types of consumption. Further, it has been argued that predicting users’ preferences is challenging for TRSs, since the retrieval of tourism information is widely proliferated. Accordingly, the interaction between user’s attitude and TRSs is considered to be important.

2.2 Communication–Persuasion Paradigm

When applying communication theories to RSs, the RS can be defined as a source factor, its recommendations as messages and its users as receivers of these messages (Yoo et al., 2012). When we apply this communication process to TRS, online tourism review websites such as TripAdvisor, Yelp can be seen as the source factor, its OTR as the message and the review reader (i.e., potential tourist) as the receiver of the review message. These process elements exist within a communication persuasion context that affects how the persuasive cues are perceived, judged and accepted. The main factor of TRS as a persuasive cue results in communication effects that elicit consumer attitudes and behavioral intentions towards the TRS (Figure. 1). This study conceptualizes aspects of the



<Figure 1> The communication-persuasion paradigm in TRSs (Modified from O’Keefe , 2002; Yoo et al., 2012)

communication process based on Yoo et al.’s (2012) three components of persuasive RSs – source factors, message factors and receiver/context factors – in the human-to-recommender system interaction context. This study discusses the factors related to the source, the message and the context. More specifically, we focused on the review message content of TRS (i.e., TripAdvisor) and the types of destinations and attractions.

2.2.1 Source factor in Tourism Recommender Systems

Source factors can be seen as having an influence on persuasion outcomes. In the human-to-human interaction context, the relevant source factors are credibility, likeability, and multiple sources (Ayeh et al., 2013; O’Keefe, 2002; Yoo et al., 2012). In other words, credible, likeable, and multiple

sources are more persuasive and professional in accordance with sharing social cues (i.e., similarity, symbols of authority, style of speech, humor, physical attractiveness, caring, familiarity, friendliness) with their receiver. In the RS context, previous studies have investigated various features and characteristics of RSs to evaluate their influence on the receiver’s perception of RS as well as its recommendations. Online user-generated content (online reviews) about travel destinations, hotels and restaurants have become a major source of information for travelers (Ayeh et al., 2013). Existing RS studies have investigated the impact of review characteristics on its persuasiveness (Zhang et al., 2010), credibility of/trust in the review (Racherla et al., 2012). Further, previous research has explored the relationship between reviewer characteristics and review helpfulness

/usefulness of RS (Baek et al., 2012; Hlee et al., 2016; Liu and Park, 2015; Racherla et al., 2012). With the increasing interest of RSs, a growing number of studies have explored the influence of source factors on receivers' perceptions and attitudes as well as the persuasiveness of its factors.

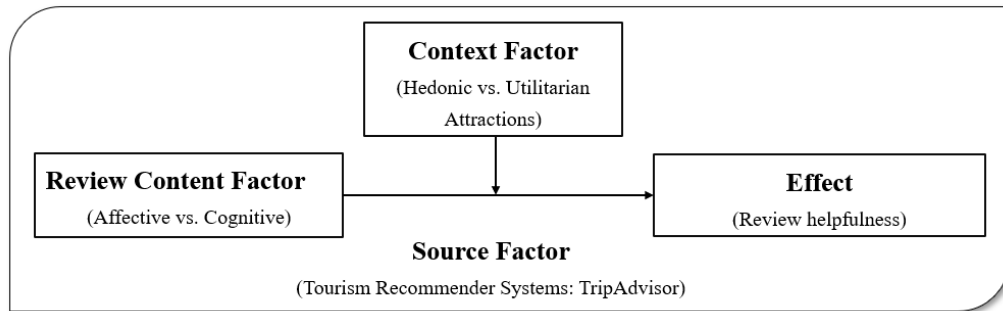
2.2.2 Message factor in Tourism Recommender Systems

Not only the source of a message but also the message itself can have a significant impact on the persuasiveness of recommendations in the communication persuasion process. O'Keefe (2002) suggested that there are three categories of message factors: message structure, message content and sequential-request strategies in human-to-human interactions. From the RS perspective, recently, some studies have asserted that the content and format of recommendations can play an important role in the receiver's evaluation of an RS as well as its recommendations (Xiao and Benbasat, 2007; Wang and Benbasat, 2007; Yoo et al., 2012). In RS studies, the influence of the message content (specificity, sidedness) and presentation format (text vs. visual) (Yang et al., 2017) have been examined. More specific recommendations affect the receiver's perception of RSs. In the RS study, in general, the extent of detailed information and integrating narrative descriptions in recommendations has been

measured as review length (e.g., Baek et al., 2012; Liu and Park, 2015; Racherla and Friske, 2012; Yang et al., 2017). The influence of recommendation format was also investigated. Notwithstanding these recent studies in the RS context, however, relatively little attention has been paid to the effect of message content. In a related vein, this study explored the impact of review language style (affective vs. cognitive) in different attraction type.

2.2.3 Context factor in Tourism Recommender Systems

Product type is also related to RS users' perception of the helpfulness of recommendations. Previous studies have investigated the moderating role of product type in the relationship between review attributes and helpfulness (e.g., Baek et al., 2012; Hlee et al., 2018a; Mudambi and Schuff, 2010; Racherla and Friske, 2012; Xia and Benbasat, 2007). In the TRS context, the moderating roles of the types of destination and attractions in the relationship have been investigated. Byun and Jang (2015) tested the effective destination advertising language in accordance with destination types (hedonic vs. utilitarian) by applying an experimental design. Accordingly, the current study proposes a conceptual model to test whether the combined effects of review message content (affective vs. cognitive) affect consumer perception of review helpfulness and whether the types of



<Figure 2> Conceptual model

attractions have a moderating effect (Figure 2). This is one of the few studies to have explored the effect of review message content in accordance with a destination type in the TRS context.

2.3 The impact of message factor and context factor in TRS

Some advertising study has focused on the topic of the communication - persuasion process. Prior advertising researchers have found that advertisements characteristics (e.g., language or format) and either product attributes (e.g., hedonic or utilitarian) have an impact on consumers' response to advertisements (Byun and Jang, 2015; Drolet et al., 2007; Kronrod and Danziger, 2013). These findings can be explained by applying the communication-persuasion matrix. Together, advertisement language (as a message factor) and product attributes (as a context factor) result in advertisements' effect on the receiver's response. Previously,

persuasive advertising has been widely investigated; however, relatively little attention has been paid to the effect of persuasive review message content on consumers' perception. This study is particularly focused on the relationship between review message content (affective vs. cognitive) and destination type (hedonic vs. utilitarian) in the TRS context.

2.3.1 The impact of review content factor: Affective vs. cognitive language

The language used in a message is often classified as affective or cognitive based on what terms, phases and expression it uses (Byun and Jang, 2015). Some phrases or expressions are distinguished in either an emotional or a rational context. Generally, figurative expressions (e.g., "Find the beautiful city in your peaceful mind") are likely to express feelings or emotional conditions that can be seen as more affective than cognitive expressions (e.g., "Find the central city of European history!"). Further, a paragraph using

the term “understand” suggests a cognitive state, whereas the same paragraph using the term “believe” suggests an affective state (e.g., “I understand this is the best place” vs. “I believe this is the best place”). This classification is similar to the results of Mayer and Tormala’s (2010) research, in which a paragraph with the term “feel” was found to be perceived as more affective, whereas a paragraph with the term “think” was found to be perceived as more cognitive.

In online tourism review context, Wu et al. (2017) asserted that literal language (similar to cognitive language), compared with figurative language (similar to affective language) should be regarded as a more typical type of language in the context online hotel reviews. This is because using language with high levels of affect intensity elicit a violation of language usage norms (Buller et al., 2000). In online review context, due to the communication with strangers, high affect language could be perceived more irrational and illogical (Jensen et al., 2013). Consequently, reviews written in cognitive language (vs. affective language) are likely to lead to more helpful towards the reviewed attraction. Taken together, we propose the following hypothesis:

H1: Online attraction reviews written in cognitive (vs. affective) language will lead to a higher level of review helpfulness.

2.3.2 Type of attractions as context factor: Hedonic vs. Utilitarian

In a number of prior studies, products have been classified as either hedonic or utilitarian (e.g., Botti and McGill, 2011; Byun and Jang, 2015; Drolet et al., 2007). Hedonic products (e.g., perfumes or music) are related with an affective and sensory experience of emotional states such as pleasure and fun, whereas utilitarian products (e.g., Bluetooth speaker, dental service) are related to a cognitively driven experience based on goal-oriented and functional tasks (Dhar and Wertenbroch, 2000).

However, there is little research on the hedonic and utilitarian characteristics of tourism attraction type (Byun and Jang, 2015; Snepenger et al., 2004). Snepenger et al. (2004) explained that each destination has different properties such as hedonic or utilitarian, and a variety of attractions which have also different attributes are included each destination. In accordance with Byun and Jang (2015)’s study, hedonic attractions are perceived more unpleasant/pleasant, boring/exciting, ugly/beautiful, and aggravating/soothing place to travel, while utilitarian attractions are perceived more impractical/practical, useless/useful, unnecessary/necessary, and worthless/valuable place to travel. Hence, the authors identified beach (scenic attractions) for hedonic attractions, and art gallery (educational attractions) for

utilitarian attractions.

In the smart tourism environment, most prototyped TRSs make recommendations of attractions of a destination (e.g., museums, monuments, scenery). For instance, when a tourist makes a choice of a certain destination in a TRS, it recommends city attractions for destination decision-making. TRS is commonly utilized to filter the results by using the user's current location and stored long-term preferences in the user profile (Gavalas et al., 2014). However, previous RS studies have suggested that the attractions filtering system takes into account various contextual cues (e.g., time, visit experience, user mobility pattern, weather, user's mood, social environment). Nonetheless, the notion of filtering review message content has thus far been ignored.

2.3.3 The interaction effects between review language and attraction type in online tourism reviews

Based on the matching effect between advertising language and product type, Drolet et al. (2007) found that affective language is more persuasive in hedonic product advertising messages, whereas cognitive language is more persuasive in utilitarian product advertising messages. The matching effect has been widely used to confirm a fit or harmony between communication language and product type (Drolet et al., 2007; Kronrod and Danziger,

2013). From the matching effect perspective, attitudes toward hedonic products are likely to be affective, whereas attitudes toward utilitarian products are likely to be cognitive (Botti and McGill, 2011; Byun and Jang, 2015).

In tourism advertising communication, since tourism is considered conventionally hedonic consumption for leisure travelers on vacation, it is assumed that affective language is more persuasive than cognitive language. However, prior researchers have found that tourism also includes utilitarian aspects, such as the utilitarian motivation of heritage travelers (e.g., Williams and Soutar, 2009). Thus, travelling elicits functional and utilitarian values. In a related vein, Byun and Jang asserted that travelers are likely to have more positive attitudes toward cognitive language in utilitarian destination advertisements, whereas they are likely to have more positive attitudes toward affective language in hedonic attractions advertisements. They employed experimental designs of advertising language and the types of destinations and attractions, respectively. However, a destination consists of numerous attractions, which may be either hedonic or utilitarian. For instance, a certain destination includes both hedonic attractions (e.g., scenery such as beaches) and utilitarian attractions (e.g., museums, art galleries) (Byun and Jang, 2015). Based on this distinction, this study employed real-world data collected from

TripAdvisor to investigate the impacts of review message on review helpfulness in accordance with hedonic vs. utilitarian attractions.

As mentioned before, Snepenger et al. (2004) suggested that destinations have different properties (hedonic or utilitarian), and a variety of attractions that also have different characteristics are included in each destination. Thus, the tourism experience is affected by either the destination or its attractions, or both. Recently, travelers have increasingly shared unique tourism experiences by posting their opinions through a TRS such as TripAdvisor. Likewise, potential travelers have retrieved useful travel information from such TRSs. In this vein, the persuasive social cues of TRS, especially the combined effect of message content and attraction type, need to be better understood.

From this perspective, it is assumed that travelers classify destinations and attractions as either hedonic or utilitarian. Thus, we classified attractions as either hedonic or utilitarian to test whether the matching effects of the message content of online reviews have an effect on review helpfulness and whether the types of attractions have a moderating effect. In other words, the matching effect of review languages (i.e., affective vs. cognitive) with attraction type (i.e., hedonic vs. utilitarian) is expected to influence users' perception of review helpfulness. Specifically,

affective language will be more effective in a hedonic attraction than in a utilitarian attraction and cognitive language will be more effective in a utilitarian attraction than in a hedonic attraction. This study proposes that attraction type will moderate the relationship between review message and review helpfulness. The hypotheses are proposed as follows:

H2: The impact of affective and cognitive language on review helpfulness would be different depending on attraction type.

H3: Cognitive language in online review for a utilitarian attraction has a stronger impact on review helpfulness than affective language.

H4: Affective language in online review for a hedonic attraction has a stronger impact on review helpfulness than cognitive language.

III. Research Methodology

3.1 Data collection

We collected data from TripAdvisor that is one of the largest travel information platforms. TripAdvisor provides a recommendation for travelers to post their travel experience of tourist attractions. When selecting the target destination, in this paper inspired by Fang et al. (2016)'s work, we selected destination that

are not too famous or too familiar. The authors asserted that in case of too famous tourist sites, tourists do not feel the need for reviews, and the reviews in unfamiliar tourist sites would not gain attention to receive helpful votes. Hence, we selected Berlin as our target destination. Berlin is ranked in 25th on the TripAdvisor Travelers' Choice 2016. Berlin is an attractive tourist destination containing various attraction, restaurants, nightlife and accommodations. It is also relatively less famous than European cities such as Paris, London and Rome. Therefore, Berlin was an ideal city for our research. Further, through the panel discussion including hospitality and tourism professors, scenery and specialty museums were selected as representative of hedonic and utilitarian attractions, respectively. Finally, we selected Brandenburg Gate for a hedonic attraction and for a utilitarian attraction in Berlin. This classification is consistent with Byun and Jang (2015)'s study. The authors classified into the beach (scenic attractions compared with educational attractions) was viewed as relatively more hedonic and the art gallery (educational attractions compared with scenic attractions) as relatively more utilitarian.

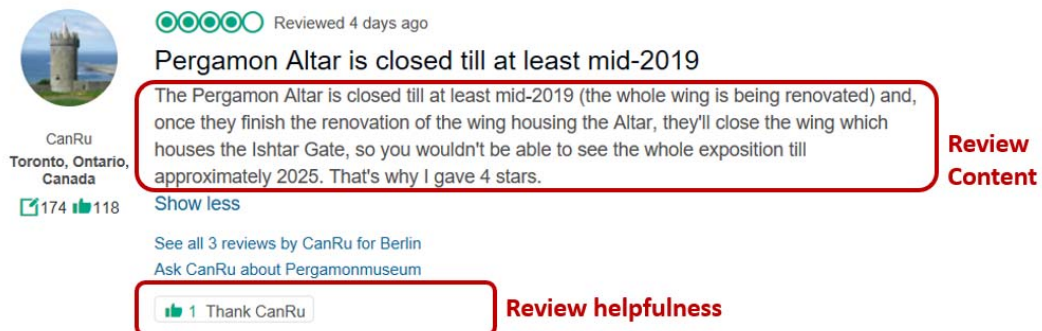
The Brandenburg Gate was the "remaining city gate of Berlin formerly used to represent the separation of the city between East and West Berlin, since the Berlin Wall came down in 1989", and now it is a symbol of German

unity" (Visit Berlin, 2016) and has been treated as a beautiful landmark of Berlin. The Peragamon Museum is "Berlin's most frequently visited museum (which) has an incredible collection of exquisite classical treasures" (Visit Berlin, 2016).

All of the reviews for each place posted during the one-year period from January 1st, 2015 to December 31st, 2015 were collected. This method minimizes the effect of seasonal issues resulting in biased reviews (Rhee et al., 2015). A total of 3,320 reviews was collected and used for this study (Brandenburg Gate = 2,078; Peragamon Museum = 1,242). We employed the LIWC (Linguistic Inquiry and Word Count) 2015, which generates 80 word categories representing the various types of words in linguistic categories, and affective, cognitive words in psychological categories (Pennebaker et al., 2007). The LIWC program has been employed in previous studies about online reviews (e.g., Ludwig et al., 2013). By using LIWC, the proportion of affective or cognitive words to total words in each review was automatically measured. Review usefulness was measured by the number of 'Thanks' received by the reviewer for each review (Figure 3).

3.2 Descriptive Analysis

The mean and maximum value of proportions in each review are of affective



<Figure 3> Snapshots of online attraction reviews posted on TripAdvisor

<Table 1> Descriptive statistics of review language and attraction type on review

	Review language	Mean	SD	N
Utilitarian Attraction	Cognitive reviews	.25	.563	878
	Affective reviews	.17	.425	198
	Neutral reviews	.18	.616	166
	Sub Total	.23	.552	1242
Hedonic Attraction	Cognitive reviews	.05	.299	1239
	Affective reviews	.04	.243	544
	Neutral reviews	.06	.246	295
	Sub Total	.05	.278	2078
Total	Cognitive reviews	.14	.440	2117
	Affective reviews	.08	.307	742
	Neutral reviews	.11	.422	461
	Total	.12	.412	3320

words (mean 6.0998, max 27.78), cognitive words (mean 9.3606, max 34.48) and helpful votes (mean 0.12, max 6), respectively. Next, each review is divided into reviews with more affective language, reviews with more cognitive language and neutral review. An index was computed by subtracting the number of affective words from cognitive words. Positive values indicate the reviews are written as relatively more rational than emotional and vice versa (Byun and Jang, 2015; Drolet et al.,

2007). We divided the reviews into three subgroups, the affective language centered reviews group (hereinafter referred to as affective reviews) (n=742, 22.3%), cognitive language centered review group (hereinafter referred to as cognitive reviews) (n=2,117, 63.8%) and neutral review group (n=461, 13.9%). The number of cognitive reviews is greater than the number of affective or neutral reviews. The current study focuses on the impact of affective reviews and cognitive

reviews on review helpfulness across the hedonic vs. utilitarian attractions. Among these, 2,078 reviews (1,239 of the cognitive reviews and 544 of the affective reviews) were posted on the Brandenburg Gate (hedonic attractions), while 1,242 reviews (878 of the cognitive reviews and 198 of the affective reviews) were posted on Peragamon Museum (utilitarian attractions) (Table 1).

IV. Results

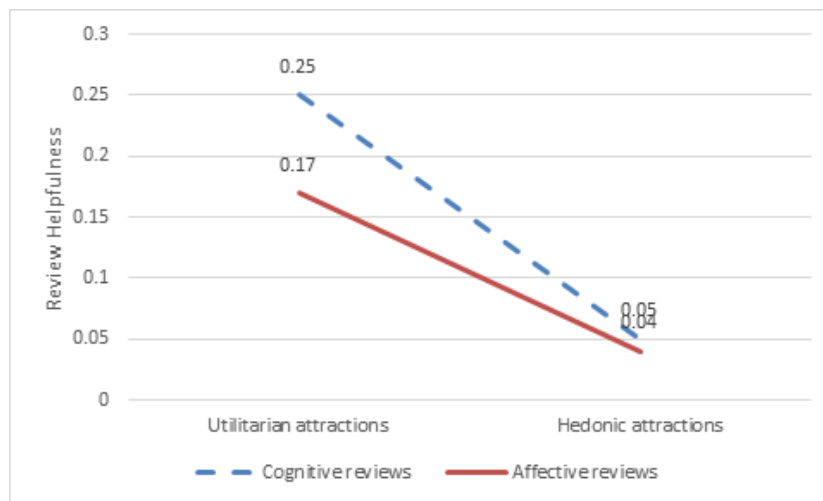
The result of the ANOVA on the mean scores of review helpfulness showed a significant main effect for review language ($F(1, 2855) = 6.618, p < 0.05$). This means that peer’s perception of review helpful toward review language differs whether it is affective or cognitive ($M_{\text{affective}} = 0.08, M_{\text{cognitive}} = 0.14$). The result is consistent with Wu et al. (2017)’s work, however, the result is different from Byun and Jang (2015)’s work. An interpretation related with this result will be provided in the discussion section.

Consequently, it is concluded that H1 is supported.

The analysis of the interaction revealed a significant effect for the affective and cognitive review language x attraction type ($F(1, 2855) = 4.30, p < 0.05$). This means that peer’s evaluations for review helpfulness toward affective and cognitive language varied across the attraction type (hedonic vs. utilitarian). This analysis confirmed that the attraction type (context factor) interacted as a moderator. Thus, hypothesis 2 was supported. Specifically, cognitive reviews (vs. affective reviews) showed a higher impact on review helpfulness in utilitarian attraction (Peragamon Museum). However, although the cognitive reviews (vs. affective reviews) have a higher average value on review helpfulness in hedonic attractions ($M_{\text{cognitive_hedonic}} = 0.05$ vs. $M_{\text{affective_hedonic}} = 0.04$), it also shows that the impact of cognitive reviews is reduced in hedonic attractions ($M_{\text{cognitive_utilitarian}} = 0.25$ vs. $M_{\text{affective_utilitarian}} = 0.17$). In other words, cognitive reviews have a more powerful impact on review helpfulness in utilitarian attractions.

<Table 2> ANOVA for review helpfulness

	Sum of squares	df	Mean squares	F	sig.
Review language	1.06	1	1.68	6.62	.010
Attractions	12.08	1	12.08	75.51	.000
Review language x Attractions	.69	1	.69	4.30	.038
Error	456.58	2855	.16		
Total	523.00	2859			



<Figure 4> Interaction effect on review helpfulness

Thus, the results concluded that H3 was supported and H4 was not supported. This is illustrated in Figure 4, and the statistical details are listed in Table 2.

V. Conclusions

5.1 Summary and discussions

This study attempted to identify the persuasive review language on review helpfulness toward destination reviews by using real-world secondary data from the dominant TRS with different attraction type (hedonic vs. utilitarian). In other words, the purpose of this study was to examine the impact of language style (affective vs. cognitive) of review content on review helpfulness the moderating roles of the

attraction type (hedonic vs. utilitarian) in the relationship between the linguistic features of online reviews and their helpfulness. The results concluded that H1 was accepted. Specifically, cognitive language was perceived more helpful than affective language in attraction reviews. The findings suggested that peers tend to judge more helpful toward cognitive language in attraction reviews regardless of attraction type in line with previous literature (Wu et al., 2017). Base on their study, as online reviews are typical communication within strangers, affective language is not suitable for the conversational norm of online review context. The authors asserted that affective language (figurative language) is likely to less favorable attitudes. The results of our study are consistent with their findings and confirmed that cognitive language could be superior than affective

language in OTR context.

However, even though there was an interaction effect between review language and attraction type, in hedonic attractions, the influence of cognitive language was reduced, but still cognitive reviews would get more helpful votes than affective reviews. In the case of hedonic attractions, it is suspected that affective reviews written higher level of affect intensity language may not fit with the meaning of Berlin city, because there are could be other influential factors, such as pre-existing perception toward Berlin (Lam and Hsu, 2006). According to the language expectancy theory (Burgoon and Jones, 1976), even though it is a hedonistic tourist attraction in Berlin, the high affect intensity language embedded reviews of Berlin may not match the context-based conversational norm due to its historical meaning. This can be explained by the media equation theory, which postulates that individuals regard media as social actors and unconsciously and automatically apply human social rules to them. However, significant interaction effects were confirmed that attraction type may be a moderator between review content language and its perceived helpfulness. Based on the Communication-Persuasion Paradigm (Yoo et al., 2012), this study concludes that a matching effect between review content language (as a message factor) and attraction type (as a context factor) has positive effects on review

helpfulness (as an effect).

5.2 Implications and limitations

This study has theoretical implications associated with its efforts to overcome the two significant limitations of previous studies about online reviews. First, the small number of studies that have focused on the linguistic attributes of online reviews' content have adopted survey- or scenario-based experiments, thus exposing them to the social desirability effect, common method bias and the difficulty of generalization. However, this study collected real online reviews from TripAdvisor and measured the helpfulness of the reviews according to whether or not the reviewers received 'Thanks' for the reviews. According to Rhee et al. (2015), survey questionnaires create a risk of the social desirability effect and common method bias. Further, with experiments, it is difficult to purely extract only the effects of independent variables and generalize the findings (Park et al., 2013). However, online reviews are free from these types of problems by representing the reviewer's real thinking. Similarly, due to the anonymity policy of TripAdvisor, no one (including the reviewers) is informed of who has clicked the 'Thanks' button on a review. Therefore, it can be assumed that the review contents used in this study represent the online review readers' real perceptions.

Second, since previous researchers have excluded the characteristics of the objects of online reviews (e.g., tourist attraction, hotel, restaurant, etc.), it was hard to identify the different roles of the online review attributes in accordance with their objects. However, the present study included both the characteristics of an online review and its objective. Specifically, the characteristics of tourism destinations and attractions (hedonic vs. utilitarian) and the linguistic attributes of online reviews (affective vs. cognitive) were focused on this study. Further, the moderating effects of the types of attractions between linguistic attributes of online reviews and their helpfulness were mainly investigated.

The practical implications are also provided. Destination managers should understand which linguistic characteristics affect review helpfulness depending on each attraction within a certain destination. Travelers' evaluation toward review content language could vary across attraction type. Therefore, more attention should be paid to the characteristics of review messages than heuristic evaluation characteristics such as review rating which has been much focused currently. Second, when destination managers promote their attractions in TRS, they should consider the linguistic effect toward their destination and attraction because considering conversational norms between language style and attraction type will be more persuasive to

potential travelers. Third, TRS designers should design a TRS, considering that the pattern of recognizing the review language differs depending on the attraction type. For example, cognitive language is much more helpful in utilitarian attractions, thus cognitive language centered reviews should be placed in the top rank in a utilitarian attractions section in order to reduce consumers' cognitive effort.

However, there are some limitations that might be supplemented by future studies. First, this study targeted only one destination (Berlin) and two attractions (Scenery and Specialty museum) as representatives of hedonic and utilitarian attractions and destinations, respectively. Therefore, further studies are recommended to collect more online reviews of other hedonic and utilitarian attractions and destinations in order to generalize the findings of this study.

Second, this study ignored the online review readers' characteristics, such as gender, age, cultural background, past visit experience and so on, since it was impossible to identify the anonymous readers who had clicked the 'Thanks' button. According to previous studies, there are significant differences in review adoption and perception in accordance with online review readers' gender and age (Gretzel and Yoo, 2008). Therefore, it can be inferred that online review readers' characteristics would influence their perception about online reviews. Thus, future studies

should employ other analysis methods (e.g., conjoint analysis) in order to more deeply understand how the attributes of online reviews enable their readers to perceive them as helpful.

References

- Adomavicius, G., Sankaranarayanan, R., Sen, S., and Tuzhilin, A., "Incorporating contextual information in recommender systems using a multidimensional approach," *ACM Transactions on Information Systems (TOIS)*, Vol. 23, No. 1, 2005, pp. 103-145.
- Ayeh, J. K., Au, N., and Law, R., "Do we believe in TripAdvisor?" Examining credibility perceptions and online travelers' attitude toward using user-generated content," *Journal of Travel Research*, Vol. 52, No. 4, 2013, pp. 437-452.
- Baek, H., Ahn, J., and Choi, Y., "Helpfulness of online consumer reviews: Readers' objectives and review cues," *International Journal of Electronic Commerce*, Vol., 17, No. 2, 2012, pp. 99-126.
- Botti, S., and McGill, A. L., "The locus of choice: Personal causality and satisfaction with hedonic and utilitarian decisions," *Journal of Consumer Research*, Vol. 37, No. 6, 2012, pp. 1065-1078.
- Buller, D. B., Burgoon, M., Hall, J. R., Levine, N., Taylor, A. M., Beach, B., and Melcher, C., "Long-term effects of language intensity in preventive messages on planned family solar protection," *Health communication*, Vol., 12, No. 3, 2000, pp. 261-275.
- Burgoon, J. K., and Jones, S. B., "Toward a theory of personal space expectations and their violations," *Human Communication Research*, Vol. 2, No. 2, 1976, pp. 131-146.
- Byun, J., and Jang, S. S., "Effective destination advertising: Matching effect between advertising language and destination type," *Tourism Management*, Vol. 50, 31-40.
- Dhar, R., and Wertenbroch, K., "Consumer choice between hedonic and utilitarian goods," *Journal of marketing research*, Vol. 37, No. 1, 2000, pp. 60-71.
- Drolet, A., Williams, P., and Lau-Gesk, L., "Age-related differences in responses to affective vs. rational ads for hedonic vs. utilitarian products," *Marketing Letters*, Vol. 18, No. 4, 2007, pp. 211-221.
- Fang, B., Ye, Q., Kucukusta, D., and Law, R., "Analysis of the perceived value of online tourism reviews: Influence of readability and reviewer characteristics," *Tourism Management*, Vol. 52, 2016,

- pp. 498-506.
- Fogg, B. J., Lee, E., and Marshall, J., *Interactive technology and persuasion. The Handbook of Persuasion: Theory and Practice*. Thousand Oaks, CA: Sage, 2002.
- Gallarza, M. G., and Saura, I. G., "Value dimensions, perceived value, satisfaction and loyalty: an investigation of university students' travel behaviour," *Tourism Management*, Vol. 27, No. 3, 2006, pp. 437-452.
- Gavalas, D., Konstantopoulos, C., Mastakas, K., and Pantziou, G., "Mobile recommender systems in tourism," *Journal of network and computer applications*, Vol. 39, 2014, pp. 319-333.
- Gretzel, U., *Consumer responses to preference elicitation processes in destination recommendation systems*. University of Illinois at Urbana-Champaign. 2004.
- Gretzel, U., and Fesenmaier, D. R., "Persuasion in recommender systems," *International Journal of Electronic Commerce*, Vol. 11, No. 2, 2006, pp. 81-100.
- Gretzel, U., and Yoo, K. H., "Use and impact of online travel reviews," *Information and communication technologies in tourism*, 2008, pp. 35-46.
- Hlee, S., Lee, J., Yang, S. B., and Koo, C., "An empirical examination of online restaurant reviews (Yelp. com): Moderating roles of restaurant type and self-image disclosure," *In Information and communication technologies in tourism*, 2016, pp. 339-353.
- Hlee, S., Lee, J., Yang, S. B., and Koo, C., "The moderating effect of restaurant type on hedonic versus utilitarian review evaluations," *International Journal of Hospitality Management*, 2018a (forthcoming).
- Hlee, S., Lee, H., and Koo, C., "Hospitality and Tourism Online Review Research: A Systematic Analysis and Heuristic-Systematic Model," *Sustainability*, Vol. 10, No. 4, 2018b, 1141.
- Hong, T. H., Niu, H., Ren, G., and Park, J. Y., "Multi-Topic Sentiment Analysis using LDA for Online Review", *정보시스템 연구*, Vol. 27, No. 1, 2018, pp. 89-110.
- Jensen, M. L., Averbek, J. M., Zhang, Z., and Wright, K. B., "Credibility of anonymous online product reviews: A language expectancy perspective," *Journal of Management Information Systems*, Vol. 30, No. 1, 2013, pp. 293-324.
- Kim, J. H., Byeon, H. S., and Lee, S. H., "Enhancement of user understanding and service value using online reviews," *The Journal of Information Systems*, Vol. 20, No. 2, 2011, pp. 21-36.
- Kronrod, A., and Danziger, S., "“Wii will rock you!” The use and effect of figurative

- language in consumer reviews of hedonic and utilitarian consumption,” *Journal of Consumer Research*, Vol. 40, No. 4, 2013, pp. 726-739.
- Lam, T., and Hsu, C. H., “Predicting behavioral intention of choosing a travel destination,” *Tourism Management*, Vol. 27, No. 4, 2006, pp. 589-599.
- Le, H. S., Lee, J. H., and Lee, H. K., “Analyzing Visitors’ Preferences on Tourism Accommodation Services by Opinion Mining,” *인터넷전자상거래연구*, Vol. 17, No. 2, 2017, pp. 111-127.
- Lee, K. Y., and Yang, S. B., “The role of online product reviews on information adoption of new product development professionals,” *Internet Research*, Vol. 25, No. 3, 2015, 435-452.
- Liu, Z., and Park, S., “What makes a useful online review? Implication for travel product websites,” *Tourism Management*, Vol. 47, 2015, pp. 140-151.
- Ludwig, S., De Ruyter, K., Friedman, M., Brüggem, E. C., Wetzels, M., and Pfann, G., “More than words: The influence of affective content and linguistic style matches in online reviews on conversion rates,” *Journal of Marketing*, Vol. 77, No. 1, 2013, pp. 87-103.
- Mayer, N. D., and Tormala, Z. L., “ “Think” versus “feel” framing effects in persuasion,” *Personality and Social Psychology Bulletin*, Vol. 36, No. 4, 2010, 443-454.
- Miller, N., Maruyama, G., Beaber, R. J., and Valone, K., “Speed of speech and persuasion,” *Journal of personality and social psychology*, Vol. 34, No. 4, 1976, pp. 615-624.
- Mudambi, S. M., and Schuff, D., “Research note: What makes a helpful online review? A study of customer reviews on Amazon. com,” *MIS quarterly*, Vol. 34, No. 1, pp. 185-200.
- O’keefe, D. J., *Persuasion: Theory and research*, Vol. 2, Thousand Oaks, CA: Sage Publications, 2002.
- Racherla, P., and Friske, W., “Perceived ‘usefulness’ of online consumer reviews: An exploratory investigation across three services categories,” *Electronic Commerce Research and Applications*, Vol. 11, No. 6, 2012, pp. 548-559.
- Racherla, P., Mandviwalla, M., and Connolly, D. J, “Factors affecting consumers’ trust in online product reviews,” *Journal of Consumer Behaviour*, Vol. 11, No. 2, 2012, pp. 94-104.
- Rhee, H. T., Yang, S. B., Koo, C., and Chung, N., “How Does Restaurant Attribute Importance Differ by the Type of Customer and Restaurant? Exploring TripAdvisor Reviews,” *Information and*

- Communication Technologies in Tourism*. Springer International Publishing. 2015.
- Snepenger, D., Murphy, L., Snepenger, M., and Anderson, W., "Normative meanings of experiences for a spectrum of tourism places," *Journal of Travel Research*, Vol. 43, No. 2, 2004, pp. 108-117.
- Sundar, S. S., and Nass, C., "Source orientation in human-computer interaction: Programmer, networker, or independent social actor," *Communication Research*, Vol. 27, No. 6, 2000, pp. 683-703.
- Sundar, S. S., and Nass, C., "Conceptualizing sources in online news," *Journal of Communication*, Vol. 51, No. 1, 2001, pp. 52-72.
- Sundar, S. S., "Loyalty to computer terminals: is it anthropomorphism or consistency?," *Behaviour & Information Technology*, Vol. 23, No. 2, 2004, pp. 107-118.
- Sussman, S. W., and Siegal, W. S., "Informational influence in organizations: An integrated approach to knowledge adoption," *Information Systems Research*, Vol. 14, No., 1, 2003, pp. 47-65.
- TripAdvisor, Retrieved December 31st, 2015, Available: https://www.tripadvisor.com/Attraction_Review-g187870-d191172-Reviews-Canal_Grande-Venice_Veneto.html.
- Visit Berlin, Brandenburg Gate, Retrieved October 18, 2016, Available: <http://www.visitberlin.de/en/spot/brandenburg-gate>.
- Wang, W., and Benbasat, I., "Trust in and Adoption of Online Recommendation Agents," *Journal of the association for information systems*, Vol. 6, No. 3, 2005, pp. 72-100.
- Wang, W., and Benbasat, I., "Recommendation agents for electronic commerce: Effects of explanation facilities on trusting beliefs," *Journal of Management Information Systems*, Vol. 23, No. 4, 2007, pp. 217-246.
- Wakefield, R. L., Wakefield, K. L., Baker, J., and Wang, L. C., "How website socialness leads to website use," *European Journal of Information Systems*, Vol. 20, No. 1, 2011, pp. 118-132.
- Williams, P., and Soutar, G. N., "Value, satisfaction and behavioral intentions in an adventure tourism context," *Annals of Tourism Research*, Vol. 36, No. 3, 2009, pp. 413-438.
- Wu, L., Shen, H., Fan, A., and Mattila, A. S., "The impact of language style on consumers' reactions to online reviews," *Tourism Management*, Vol. 59, 2017, pp. 590-596.
- Xiao, B., and Benbasat, I., "E-commerce product recommendation agents: use, characteristics, and impact," *MIS*

- quarterly*, Vol. 31, No. 1, 2007, pp. 137-209.
- Yang, S. B., Hlee, S., Lee, J., and Koo, C., "An empirical examination of online restaurant reviews on Yelp. com: A dual coding theory perspective," *International Journal of Contemporary Hospitality Management*, Vol. 29, No. 2, 2017, pp. 817-839.
- Yoo, K. and Gretzel, U., "Influence of personality on travel-related consumer-generated media creation," *Computers in Human Behavior*, Vol. 27, No. 2, 2011, pp. 609-621.
- Yoo, K., and Gretzel, U., "Measuring the credibility of recommender systems," *Information and Communication Technologies in Tourism*, Springer International Publishing, 2006, pp. 285-295.
- Yoo, K. H., Gretzel, U., and Zanker, M., *Persuasive recommender systems: conceptual background and implications*. Springer Science & Business Media, 2012.
- Zanker, M., Bricman, M., Gordea, S., Jannach, D., and Jessenitschnig, M., "Persuasive online-selling in quality and taste domains," *In International Conference on Electronic Commerce and Web Technologies*, Springer, Berlin, Heidelberg. September 2006, pp. 51-60.

이 선 영 (Hlee, Sun-Young)



현재 경희대학교 호텔관광대학 스마트관광연구소에서 연구교수로 재직하고 있다. 경희대 컨벤션전시경영학과에서 관광학 박사학위를 취득하였으며, 이화여자대학교 행정학과에서 학사학위를 취득하였다. 주요 연구 관심분야는 스마트 관광도시, 스마트서비스, 스마트MICE 등이다.

함 주 연 (Ham, Ju-Yeon)



현재 경희대학교 호텔관광대학 스마트관광연구소에서 연구교수로 재직하고 있다. 고려대학교 경영학과에서 경영학(MIS) 박사학위를 취득하였으며, 연세대학교 정보대학원에서 정보시스템학 석사학위를 취득하였다. 주요 관심분야는 개방형 혁신, 오픈(공공) 데이터 개방 및 활용, 스마트 관광 도시, 지식경영 등이다.

정 남 호 (Chung, Nam-Ho)



현재 경희대학교 호텔경영학과 교수로 재직 중이며, 영국의 University of Surrey에서 방문연구원으로 활동하였다. 주요 관심분야는 소비자의 정보시스템 사용과 지식공유 활동이며 최근에는 연구분야를 호텔 및 관광분야로 확장하여 스마트 관광과 관련된 다양한 연구와 과제를 수행 중이다.

<Abstract>

Destinations analytics with massive tourist-generated content: Applying the Communication-Persuasion Paradigm

Hlee, Sun-Young · Ham, Ju-Yeon · Chung, Nam-Ho

Purpose

This study investigated the impact of review language style (affective vs. cognitive) on review helpfulness and the moderating effects of the types of attractions in the relationships between the review language and its helpfulness.

Design/methodology/approach

This study investigates the impact of review language style (affective vs. cognitive) on review helpfulness and the moderating effects of the types of attractions in the relationships between the review language and its helpfulness. This study selected two hedonic and utilitarian attractions (Hedonic: Brandenburg Gate, Utilitarian: Pergamon Museum) located in Berlin. A total of 3,320 reviews was collected from TripAdvisor. We divided online reviews posted for these places into reviews with more affective language and with more cognitive language by using the LIWC. Then, we investigated the impact of language effect on review helpfulness across the attraction type.

Findings

The findings suggest that peers tend to judge more helpful toward cognitive language in attraction reviews regardless of attraction type. This study found that peers tend to perceive more helpful toward cognitive review in utilitarian attractions. Even though there was an interaction effect between review language and attraction type, in hedonic attractions, the influence of cognitive language was reduced, but still cognitive reviews would get more helpful votes.

Keyword: Smart tourism destinations, Online reviews, Communication-persuasion paradigm, Affective vs. cognitive language, Attraction Type

* 이 논문은 2018년 9월 18일 접수, 2018년 9월 29일 게재 확정되었습니다.