Examining the Use of Geotags on Instagram:
Motivation, Satisfaction, and Location-based Information Sharing in Hong Kong

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Abstract

The advent of location-based social networks (LBSNs), and the pervasive use of smartphones have allowed individuals to easily inform their status through locational information. This led to a new trend in social media: to upload geotagged photos that illustrate the location of the images and then share them with others. In this circumstance, the current study aims to examine the use of geotags on Instagram. Further, the motivations for using geotags as well as the relationship among the motivation, satisfaction, and location information sharing behavior are analyzed. The online survey was conducted on 411 respondents of Hong Kong who are active Instagram users. Based on uses and gratification theory and goal theory, the users' motivations and goals for utilizing geotags were divided into mainly two categories; task-involved and self-involved goals. Then, four different motivations (contribution, memory aid, showing off, and reputation gaining) were further examined. The result indicated that contribution, memory aid, and reputation gaining were the goals and motivation for the users to utilize geotags on Instagram, having a positive impact on satisfaction. However, a positive relationship between showing off and geotag satisfaction was not supported. Among four different factors, memory aid was found to have the strongest influence on geotagging satisfaction. The result of testing the relationship between geotag satisfaction and further location information sharing behavior also turned out to have a positive relationship. The implications and limitations of findings are also discussed in the study.

Keywords: Geotags, Location-based Social Media (LBSM), Instagram, Motivations, Satisfaction

1. INTRODUCTION

In conjunction with mobile devices and internet connectivity, global navigation satellite systems made it easier for users to add location information to a web directory [1]. Following the worldwide popularity of social network services in the past few years, the advent of location-based social networks (LBSNs) has let users check their friends' locations or search for geotagged photos [2]. In other words, LBSNs enable users to inform their status via location. With the pervasive use of smartphones, a myriad of people utilize geotags in their social media posts [3]. The current trend in social media is to produce geocoded photographs that illustrate

the image of specific locations and then share them with the public [4].

LBSNs let users share their real-time location with others through mechanisms that designate names to the global positioning system (GPS) for users to check-in [5]. Some literature has focused on user's behaviors on LBSNs, such as Foursquare [6-7] to review the motivation of users using geotags. However, it is ambiguous whether these motivations can apply to non-location-based social media services like Instagram or Facebook, which also allow the users to add their location to photos or videos. Unlike the location-based services, which have an apparent reason for sharing users' locations or having geotags, there is little understanding of why the users do the same on their social media sites [3]. Thus, the current study aims to examine the motivations of locational information sharing on Instagram through a survey conducted on Instagram users of Hong Kong.

Based on the uses and gratification theory and goal theory, users' motivations and goals for using geotags are divided into task-involved and self-involved. The study further investigates which kind of venue is the most popular check-in place for the users and the relationship among the motivation to use geotags, geotagging satisfaction, and location information sharing behavior.

2. LITERATURE REVIEW

2.1 Hong Kong and Geotagging on Instagram

Hong Kong is densely populated with more than 7 million inhabitants, with a population density of 6,690 people per square kilometer [8]. Hootsuite survey shows that 78 percent of the Hong Kong population (5.8 million people) are active on social media platforms [9]. In January 2019, 45 percent of the Hong Kong population (2.64 million people) were active Instagram users [10]. Furthermore, more than 60% of them were young people between the ages of 18 to 34, of which 56.6% were women. These numbers highlight how young people, especially women, are leading users of Instagram in Hong Kong. Instagram is "a mobile photo and video capturing and sharing service (p.595)" [11] in which the users can easily share their status through photos or videos. Since its launch in October 2010, Instagram has been the fastest-growing among numerous social media platforms in the present world [12]. There are over 1 billion monthly active users of Instagram [13].

Social media users take advantage of geotags, geographical identification, to pinpoint the location to others [14]. Geotagging is allowed in most social media platforms like Facebook, Twitter, and Instagram. In the case of Instagram, users can add a location to each of their postings. Geotagging allows users to search for content on social media by utilizing geographic filtering [15]. For example, many users prefer to geotag and share it on Instagram during their vacation [16]. People tend to trust others they know for suggestions on where to visit [17], and thus, location tagging on social media also prompts consumption at venues [18]. Several studies have focused on social media with geotagging functions to understand human mobility [19], demographics [20], and to infer user location based on geotags [21].

Moreover, examining geotagged posts can aid in comprehending people's mobility as well as social events [22]. A great deal of research has studied the use of geotags on social media, and it is currently a booming field from both the theoretical and practical perspectives [3]. In the study of Instagram, at least 28.8% of users have one of their photographs geotagged at the very least, and the GPS tagged photos sharing on Instagram is 31 times higher when compared with Twitter [11].

2.2 Location-based Services (LBSs) and Location-based Social Media (LBSM)

Location-based services (LBSs) are defined as "a subset of web services meant to provide functions that are location-aware, where the use of such services is predicated on knowledge of where the services are engaged (p.1267)" [23]. LBSs allow users to display their current real-time location with others through the use of GPS [24]. In addition, many of LBSs let users perform a "check-in", an activity that publishes the real-time location

through social media [4] when they arrive at venues and share their location with other users [25]. For instance, LBSs, such as Foursquare was examined to understand people's behavior and motivations in sharing their locations [5]. In line with this, the social media platforms that have the function of letting users upload photos and videos with locational information are referred to as location-based social media (LBSM) [26]. These services are possible through location-aware smartphones, and the users can save their location within the social media platforms. Through GPS, advanced Web 2.0 technology, and mobile devices, the users can easily share their real-time location along with the status, photos, or videos (usually called "check-in"), leave comments regarding locations, connect with friends, and find others who are nearby [27]. For example, Facebook Places was launched in August 2010, and it allowed users to geotag restaurants, coffee shops, or other locations [28].

2.3 Uses and Gratification Theory and Reasons for People Using Geotags

Uses and gratification theory explains how individuals choose to utilize media to satisfy their social and psychological needs as well as to fulfill their goals [29]. It is supposed that people actively seek out and utilize media to achieve their expectations. There are five assumptions in regards to the media and the users [30]. To begin with, the audiences and users are goal-directed or motivated to use media. Moreover, people satisfy their needs by selecting and utilizing a certain kind of media. Third, communication behavior is mediated by social and psychological factors. In addition to this, media compete with other kinds of communication, and thus, there exist clear relationships between the use of media to fulfill needs or desires. Lastly, in media-person relationships, people are generally more influential than media. The theory suggests the utilization of purposeful communication tools to satisfy cognition, emotional, and social need [29]. It is further emphasized how the audiences are goal-oriented when actively selecting, interpreting, and integrating media messages into their lives to get the highest satisfaction [31].

Research has focused on motivations for utilizing social media platforms. For instance, in the case of Facebook, three main motivations for the usage were suggested, which are entertainment, communication, and habitual diversion [32]. In another study, five different motivations for utilizing social media platforms were examined, which are expressing emotion, exchanging information, maintaining social networks, integration, and entertainment [33]. Moreover, ten motives for utilizing social media platforms were explored [34] which are finding information, consuming time, for fun, relaxing, social networks, communication, discussing, sharing information, exchanging knowledge, and being user-friendly. The earlier stages of Facebook studies mainly focused on the features of social networks and the connection with friends [35]. On the other hand, applying the uses and gratification theory in the context of Instagram, the users were more concerned with their selves than the connection with others [36]. The motivations for using Instagram were self-promotion, showing personal identity, and recording live events. Along with these motivations, Instagram users also utilize it to satisfy their needs, such as to search for information, to gain attention and reputation [37], and to interact with others [38].

Additionally, eight motivations for using Instagram like spending time and sharing information were also examined [39]. While there are varying motivations for the usage, some literature has further explored the use of geotags, the act of "check-in" on social media. In the study of Facebook check-in, individuals' personality traits affected self-disclosure as well as the intensity of check-in [40]. In addition to this, examining the motivation of using geotags on Twitter, the users used geotags on tweets to show off their location and to communicate with family and friends [3]. Moreover, in the case of Foursquare, individuals tended to check-in while taking their norms into account [25].

The motivations for tagging photos can be divided mainly into two dimensions; sociality and function [41]. In the first dimension, sociality is then classified into self and social, while in the second dimension, the function is divided into organization and communication (Table 1). Therefore, the motivations for tagging photos are categorized into four quadrants; self/organization, self/communication, social/organization, and social/communication. This categorization of motivations can also be specifically applied to geotagging behavior. The people of the "self/organization" are motivated to tag to retrieve their photos later for sharing. In contrast, the people of the "self/communication" enter tags for the future recall of the context. Furthermore, the "social/organization" category represents the motivations of providing their photos to interested others. Lastly, the people of the "social/communication" category tag in order to offer explanations to known others.

Table 1. Motivations for tagging photo

		Function	
		Organization	Communication
Sociality	Self	Recovery	Background for self, memory
	Social	Contribution	Social signaling

2.4 Goal Theory and Geotag Satisfaction

Goal theory supposes that the goals of individuals affect one's behaviors and performances [42]. In other words, it assumes that people with the goals are more motivated as they will strive to achieve their aims. Specifically, the two kinds of goals are identified which are task- and ego-involved [43]. First of all, the task-involved goal refers to learning skills or gaining insight, whereas the ego-involved goal represents developing one's ability that prevails over others. The individual with a task-involved goal focuses on developing skills, learning skills, and demonstrating mastery of tasks [44]. Therefore, the purpose of achievements and mastery is "self-referenced" and the center of task-involved goal is the conviction that one's endeavor will lead to success [45]. However, on the other hand, individuals with an ego-involved goal tend to focus on achieving success through minimal endeavor and by surpassing others. These people tend to be externally motivated, seeking social recognition and status [46]. In addition to this, the center of ego-involved goals is the concentration on individual capabilities and self-worth [45]. Several studies on goal theory have examined the motivations and achievements in school [47-48]. However, only a few studies of goal theory have been conducted on social media context and users' motivations.

The task-involved goals prompt intrinsic motivation [49]. People of inherent motivation tend to be attracted to the behaviors that can obtain pleasure or enjoyment [50]. In social media platforms, as users are willing to aid others or to progress, they share information [51]. Therefore, social media users utilize geotags to allow other users to check the locational information [14]. In addition to this, users suppose that utilizing geotags to share helpful information and experience can aid others and at the same time, are delighted about them. Likewise, people prefer to release and share locational details on social media.

Contribution. The first motivation entails contribution or desire to aid and support others of the social media platform. The action of utilizing geotags is the competence to practice contributions to the community as well as the expectations of rising popularity and expertise [52]. Locational information on sharing would have two specific purposes; functional and social [41]. The users share the news on social media for future use and aid

the community development. Thus, as Instagram has a function of sharing location and geotags, the contribution is proposed as the first motivation of using geotags.

Memory aid. The second motivation includes retrieval, directory search tags, and memory [41]. Some people used LBSM as a social diary classifying life using geotagging [53]. In addition to this, the users of LBSM utilize the function to record the memory, their personal experiences [17]. Furthermore, people use geotags to connect with friends, enjoy their locational information sharing, and discover new venues for their experiences [6]. Thus, memory is proposed as a second motivation under the task-involved goals.

In the aspect of social media, earning a reputation can be one of the social rewards and can be inspired [54]. Social media users tend to publish their experiences or post information to increase their reputation within the virtual communities [55]. People with ego-involved goals are inclined to focus on their strengths and achieve accomplishments unrelated to the goal like social reward and others' attention [56]. Social media users share their experiences on social media to improve their social status by showing off their knowledge, and financial ability [55].

Showing off. Research on LBSM suggests that showing off is closely related to the increasing trend of using geotags [40, 57]. People can utilize LBSN to share locations with friends to boost certain aspects of themselves, and for the audience, these check-ins are performances [25]. For instance, users tend to prefer checking in to the location where their followers can be impressed instead of checking in to places like McDonald's [58]. Moreover, multinational migrants may use the "check-in" on Facebook to cope with their identity when moving from one country to the other by showing off the location [57]. Thus, showing off is the first motivation under an ego-involved goal.

Reputation gaining. Another motivation for sharing information within the community is to enhance the community's status [59]. The geotags involve social signaling and content descriptors for other people [26], and the users might earn a higher reputation through uploading a myriad of geotags. For example, people share information on Wikipedia because of their reputation [60]. In line with this, locational information sharing on Instagram can be seen as an act of sharing information.

There is a positive relationship between satisfaction and behavior intention [61]. Furthermore, people continuously use or reuse social media platforms because of the satisfaction of sharing information [62]. Thus, people who are satisfied with using the geotags or enjoying them would positively impact reusing them in the future. As a result, users who are highly satisfied with geotags may strongly wish to upload their photos along with the geotags and share the locational information.

3. HYPOTHESES

Building upon the earlier research, the current study proposes that users' motivations for utilizing geotags on Instagram can be categorized into two groups; task-involved and self-involved goals. For the task-involved goals, contribution and memory aid are examined, while showing off and reputation gaining are examined as the ego-involved goal.

H1. Contribution (H1a) and memory aid (H1b) motivations have a positive impact on geotagging satisfaction.

H2. Showing off (H2a) and reputation gaining (H2b) motivations have a positive impact on geotagging satisfaction.

H3. Geotag satisfaction has a positive impact on further location information sharing intentions.
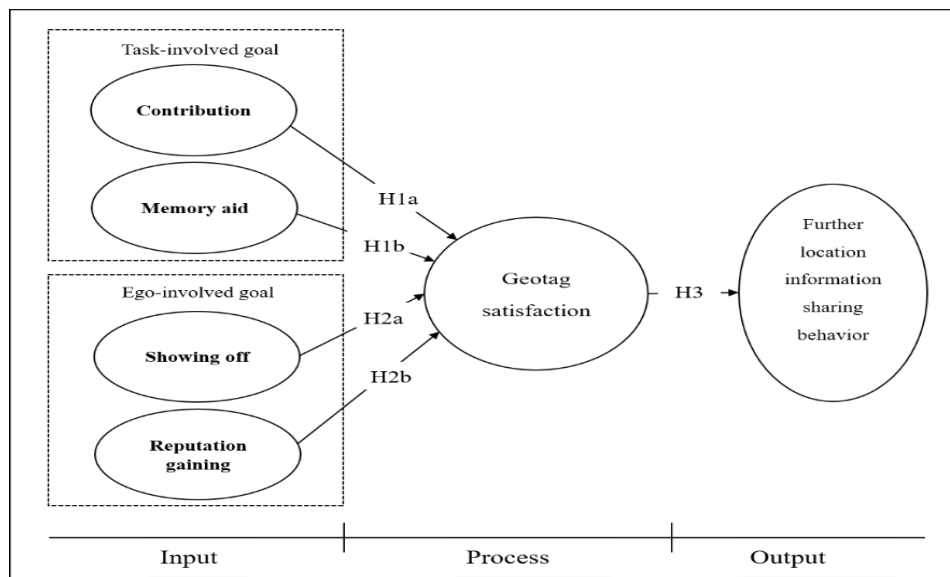
Figure 1. Research model

4. METHODS

4.1 Participants

An online survey with Hong Kong Instagram users was conducted to test hypotheses. Starting from November 6, 2019, until November 13, 2019, 411 questionnaires have been collected. Of these 411 respondents, 367 (89.3%) were female, and 44 (10.7%) were male; most of them are in the age of 18 to 24 (n = 181, 44%) followed by 12 to 17 (n = 121, 29.4%) and 25 to 34 years old (n = 98, 23.8%). Among them, 197 participants (47.9%) responded to always viewing photos on Instagram, and 171 participants (42%) responded that they always viewed photos on Instagram stories. In the case of sharing photos with geotags on Instagram and Instagram stories, 11.2% of participants have never shared photos with geotags through Instagram posts, and 14.2% of participants responded to have never shared photos with the geotags through Instagram stories.

4.2 Measures

All the items were measured on a 5 - point Likert scale ranging from "*strongly disagree*" (1) to "*strongly agree*" (5) unless another response format was mentioned. The survey questionnaire was developed in English and was conducted in English. Basic demographics and general social media usage were measured other than the following variables.

Instagram use. Participants were asked about their frequency of Instagram usage on a 5 - point scale ranging from "*Never*" (1) to "*Always*" (5). Four items (Cronbach's α = .92) were about their behaviors of viewing and sharing on Instagram and Instagram stories. The example item is "How often do you spend time viewing photos on Instagram stories?"

Location sharing (Geotags) on Instagram. Participants were asked, "How often do you share photos with the geotags on Instagram?" and "how often do you share photos with the geotags on Instagram Stories?". The questions were answered on a 5 - point scale ranging from "*Never*" (1) to "*Always*" (5).

Geotag Usage patterns. Participants were asked to select the type of venue that they usually tag through the function of geotagging on Instagram. 8 categories of choices were provided as possible options; travel spots, restaurant/ café, shopping mall, transportation, arts & entertainment places, outdoors/ sports venues, colleges & universities, and residences.

Motivations. A total of twenty-five items were adapted to measure motivations [5-6, 57, 63]. The contribution was measured with five items (Cronbach's α = .77). An example item is "Allow the others to discover where the place of the photo is. Memory aid was measured with nine items (Cronbach's α = .85). An example item is "Keep a record of where I have been." Showing off was measured with seven items (Cronbach's α = .88). An example item is "Show that I was at a cool, amazing, special, or popular place." The reputation gaining was measured with four items (Cronbach's α = .92). An example item is "to get likes." CFA analyses showed that all the motivations are unidimensional.

Geotag satisfaction. Participants were asked to answer the following four items (Cronbach's α = .89), "Overall, I am satisfied with using geotag.", "Overall, I am glad to use geotag.", "Overall, I feel good to use geotag." and "Overall, I feel pleasure with using geotag." CFA analysis showed a one-factor model.

Further location information sharing behavior. Participants were asked with three items, "I will feel good when I can tell others about my great experience by posting geotagged photos.", "I intend to share my experience with other people by posting geotagged photos." and "I will be posting geotagged photos on Instagram." Its reliability (Cronbach's α) was .81, and its CFA analysis confirmed one factor.

5. RESULTS AND DISCUSSION

5.1 Results

To examine the proposed research model, SPSS 24.0 and AMOS 25.0 were used in the current study. Table 2 shows the descriptive statistics of the variables and correlations among the variables. There is a significant correlation between contribution, memory aid, showing off, reputation gaining, geotag satisfaction, and further geotags information sharing behavior.

Structural equations were modeled to evaluate the effectiveness of the research model. The structural model results revealed that 30% of the variance in geotag satisfaction can be explained by the motivations (R^2 = .30) and 60% of the variance in further location information sharing behavior can be explained by geotagging satisfaction (R^2 = .60). Figure 2 illustrates the results of the structural equation modeling analysis. Table 3 demonstrates the standardized structural estimates and tests of the hypotheses. H1a, H1b and H2b, assuming the positive impact of contribution (β = .13, t = 2.20, p = .029), memory aid (β = .36, t = 6.14, p = .000), and reputation gaining (β = .17, t = 2.69, p = .009) on geotagging satisfaction were supported. In particular, memory aid was found to have the strongest relationship with geotagging satisfaction with p-value of less than .001. H2a predicted a positive relationship between showing off and geotag satisfaction. However, the relationship between showing off and geotag satisfaction was statistically insignificant (β = .03, t = .43, p = .671). Therefore, H2a was not supported. Finally, the result of the test of H3 pointed out that geotag satisfaction, and further location information sharing behaviors had a positive relationship (β = .78, t = 23.40, p = .007).

Table 2. Descriptive statistics of the variables and correlations among the variables

	Mean	SE	(1)	(2)	(3)	(4)	(5)	(6)
(1) Contribution	2.49	.64						
(2) Memory aid	2.32	.63	.57**					
(3) Showing off	2.66	.79	.59**	.53**				
(4) Reputation gaining	2.98	1.06	.44**	.32**	.69**			
(5) Geotag satisfaction	2.39	.71	.47**	.55**	.45**	.38**		
(6) Further location information sharing behavior	2.29	.72	.55**	.63**	.46**	.33**	.77**	

Notes: ** $p < .01$

Table 3. Standardized structural estimates and tests of the hypotheses

Hypotheses	Path	β	t-value	Results
H1a	Contribution → Geotag satisfaction	.13*	2.20	Supported
H1b	Memory aid → Geotag satisfaction	.36***	6.14	Supported
H2a	Showing off → Geotag satisfaction	.03	.43	Not supported
H2b	Reputation gaining → Geotag satisfaction	.17**	2.70	Supported
H3	Geotag satisfaction → Further location information sharing behavior	.78**	23.40	Supported

Notes: * $p < .05$; ** $p < .01$, *** $p < .001$
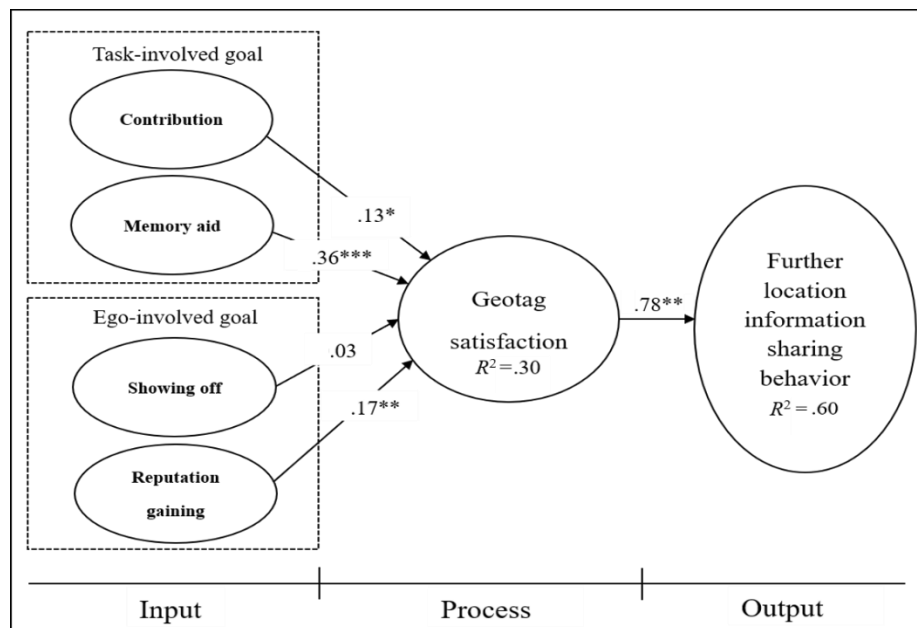
Notes: * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 2. Results of the structural equation modeling analysis

5.2 Discussion

Geotags on Instagram allow users to upload photos or videos while exposing their current location. The present study aimed to investigate the factors that influence locational information sharing behaviors. Based on the goal theory, the users' motivations for using geotags were divided into two categories; task-involved and ego-involved goals. Furthermore, along with the motives, the relationship between the motivations of using geotag, geotag satisfaction, and the locational information sharing behaviors were also tested.

Among four different motivations, contribution, memory aid, and reputation gaining were found to have a positive relationship with the satisfaction of geotagging usage. On the other hand, showing off was found to have an insignificant effect on satisfaction. Moreover, geotag satisfaction was found to have a positive relationship with further locational information sharing behavior. Thus, the results of this study show that the users who are satisfied with using geotag appeared to further engage in behaviors of sharing photos or videos with geotags through Instagram.

Among four motivations, memory aid was the most substantial influence. This demonstrates that people are using geotags on Instagram to record their daily lives or locations. The documentation was indicated to be one of the essential motivations for using Instagram [64], a social media platform that allows users to upload photos and texts. The difference from other social media platforms is the availability of a caption under the photo. With the function of geotags and the design of Instagram, which makes it look like a diary and a photo album, users incline to document their moments of life events [36]. Our study data examining geotag usage patterns illustrate that most of the participants were using geotags on travel spots (35.5%) followed by restaurants and cafés (33.7%). Consequently, this indicates that Instagram users are mostly tagging their photos or videos while traveling. The result of the current study proves that geotags offer users a tool by allowing them to record the places where they have been during their travel.

Moreover, contribution and reputation gaining were found to be predictors of satisfaction. More than 30 percent of the participants were tagging places like restaurants or cafés. This result illustrates that Instagram

users are utilizing geotags to share locational information with others. The users are using a social media platform to seek information from other users [65]. For instance, as the users tag the address of the places when they are uploading the photos, the followers can quickly check the location of uploaded photos with the function of geotags. Furthermore, some users upload photos with geotags to introduce famous places to others. Through the process of adding, they are gaining a reputation and becoming a key opinion leader on Instagram. The information shared on social media can aid the users to build relationships with other individuals and build up social networks [66]. Most Instagram users upload content to gain popularity and likes on their photos to show off their popularity status among their friends [36]. In addition to increasing likes, the number of followers is one of the standards of representing a degree of reputation. These kinds of social support from other users have a positive effect on one's self-worth [67]. Thus, it can be understood as Instagram users upload photos with geotags to gain likes and comments to earn reputation and increase their popularity among one's community.

Furthermore, the previous research has shown that social media users use social media platforms every day and allow individuals to update their status based on their consumed goods to show off and the studies have suggested the relationship of showing off with the use of tags or geotags [40, 57]. However, unlike these results, the current study indicated that showing off did not significantly affect the use of geotags. This may be due to the differences that exist between Instagram and other location-based social media. In addition to this, the differences between the motivation of users to upload a photo with a tag and with a geotag may also result in the difference.

Although the current study was meaningful in investigating the motivations for using geotags as well as the popular venues for the check-ins and the relationship among motivation of using geotags, geotagging satisfaction, and further locational information sharing behavior, there exist some limitations. First of all, while Instagram contents also differ as some are lasting (e.g., Instagram posts) while others are ephemeral (e.g., Instagram stories), in the current study, the kinds of contents were not classified. Thus, the classification of contents posted on Instagram may bring about a deeper understanding of the platform for future research. Furthermore, regarding the factor of showing off, the results came out to be different from the previous research. Thus, in the future, further analysis of the possible reason for different results and the Instagram platform itself should further be examined. Lastly, while the current study mainly examined a person who actually uses geotags in sharing posts, it would be meaningful to divide the types of users on Instagram to those who post and share geotagged photos and to those who mainly utilizes the geotagging functions on Instagram as followers for the future studies.

Acknowledgement

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