

# **Factors Affecting the Continuance to Share Location on Social Networking Sites: The Influence of Privacy Concern, Trust, Benefit and the Moderating Role of Positive Feedback and Perceived Promotion Innovativeness**

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## **ABSTRACT**

Location sharing has become an indispensable part of social networking sites (SNSs) that brings business many opportunities and fosters sustainable business activities by increasing the efficiency of location promotion. This study investigated the factors that affect location sharing behavior among SNS users and how to sustain such behavior. The results of our survey of 210 Facebook users recruited from MTurk indicated that privacy concerns and trust in SNS members have significant impacts on the perceived risk of location sharing while trust in SNS providers does not have such an impact on perceived risk related to location sharing. Also, impression management and incentive are significantly associated with the perceived benefits of location sharing. Furthermore, both perceived risk and perceived benefits of location sharing are found to have significant impacts on attitudes toward sharing location. Notably, this study contributes to the post-adoption literature when examining the relationship between attitude toward sharing location and the incentive to continue location sharing behavior under the moderating effect of positive feedback and perceived promotion innovativeness. The results showed that positive feedback and perceived promotion innovativeness are essential factors that enhance the relationship between attitude toward location sharing and continued sharing of location. Detailed discussions and future research directions are provided.

**Keywords:** Location sharing, Benefits, Risks, Privacy concern, Trust in SNS provider and member, Impression management, Incentive, Positive feedback, Perceived promotion innovativeness

## INTRODUCTION

With the booming use of smartphones and the development of the Global Positioning System (GPS), new services adopting location-based technologies, such as location-based contextual advertising, vehicular navigation systems, and local recommendations, are becoming increasingly popular (Tsai et al., 2009). Along with the rapid growth of social networking sites (SNSs), location-based technology has been developed to integrate into SNSs and has become an indispensable part of these sites. Early examples of location-based SNSs are Foursquare, Loopt, Wikitude.me (Jang & Lee, 2018). The increasing number of these mobile application users has gradually made the use of location-based services a social norm (Venkatesh, Morris, Gordon, & Davis, 2003). Such services are considered powerful tools, providing not only users but also marketers and retailers with great opportunities to exploit unprecedented benefits (Tsai et al., 2009).

Many applications that consist of both location-based service (LBS) features and SNSs are widely available in the current market. For marketers, such applications benefit them in terms of better targeting customers through personalized services. Based on personal real-time location data, sales information for nearby shops can be sent to people. Another way of attracting new customers via a location-based service is to capitalize on customer's existing SNS usage by asking people to check-in or give reviews in exchange for coupons or redemption of coupons. These apps allow users to navigate direction, track location based on real-time data, search for recommendations about nearby places and other related information, as well as being informed of locally personalized services (Jang & Lee, 2018; Tsai, Kelley, Cranor, & Sadeh, 2010). Also, users can share information about any places they have experienced on SNSs. This information will help reduce the time required for others to find places or prevent them from experiencing undesirable locations. Due to these benefits to society, location-based services are considered eco-friendly business activities, which is a trend in the modern technological industry (Jang & Lee, 2018). Along with the growth of location-based platforms, however, there is increasing concern about such systems. Location information could be manipulated for stalking, tracing routes, or identifying a user's real identity. Once location data is intentionally used for these harmful purposes, it can be used to seriously hurt people or cause large-scale loss of privacy (Puttaswamy & Zhao, 2010).

Due to both the benefits and risk concerns, research on location-based sharing platforms has been receiving significant attention. Dominant concepts related to location sharing involve motivation (Bilogrevic, Huguenin, Mihaila, Shokri, & Hubaux, 2015; Patil, Norcie, Kapadia, & Lee, 2012), personality traits (Chorley, Whitaker, &

Allen, 2015), privacy (Wang & Lin, 2017; Zhou, 2017), trust, benefits, and social influence (Beldad & Citra Kusumadewi, 2015), and self-disclosure (Chen, Su, & Quyet, 2017; Wang, Duong, & Chen, 2016). Several studies on location-based services drawing from the Privacy Calculus Model, the Technology Acceptance theory, and the Elaboration Likelihood model have investigated different outcomes related to users' location sharing behavior. The common dependent variables taken into consideration include LBS adoption (Beldad & Citra Kusumadewi, 2015; Jang & Lee, 2018; Xu & Gupta, 2009; Xu, Teo, & Tan, 2005; Zhou, 2011) and intention to disclose information (Chang & Chen, 2014; Chen et al., 2017; Koochikamali, Gerhart, & Mousavizadeh, 2015). Therefore, we aim to enrich the existing literature on location sharing behavior by examining the role of users' perceived risk and benefit on their likelihood of continuing sharing information. Specifically, drawing from the privacy calculus model, we posit that privacy concern, trust in the SNS provider, and trust in SNS members are the antecedents of perceived risk, while perceived benefits are predicted based on impression management and incentive.

Additionally, continuance usage is considered to be a critical element in assessing the sustainability of an online platform, which has not been treated in much detail in prior literature. To date, only a few studies have taken into account the issue of continuance usage of local sharing on SNSs. Yun, Han, and Lee (2013) found that while social influence doesn't impact user willingness to continuously use location-based services, performance expectancy (i.e., a user's belief that technology can help to accomplish a goal), and effort expectancy (i.e., a user's perceived ease of use) can significantly predict such behavior. Contradictory to this finding, the relationship between perceived usefulness and continuance intention toward Facebook check-in is not supported in Lin, Lu, Hsiao, and Hsu (2014). Another study by Wang and Lin (2017) demonstrated perceived trust as the antecedent of continued usage intention.

In summary, the findings for continuance usage in the context of location-based services is somewhat inconsistent and insufficient. Therefore, this study also contributes to the current literature on IS continuance usage in the context of post-adoption location sharing behavior and related factors. Previous research has shown that the favorable attitude derived from receiving positive feedback may help sustain user location sharing in the future (Tsai et al., 2009). In addition, location sharing is being increasingly adopted by marketers as an innovative way to approach customers. Previous studies have also shown the impact of perceived innovativeness on user outcome behavior (Fu & Elliott, 2013; Lafferty & Goldsmith, 2004). Therefore, this study is also an attempt to investigate the moderating role of positive feedback and perceived promotion

innovativeness on user outcome behavior, which in this case is the relationship between attitude and intention to continuously share location information.

## **THEORETICAL BACKGROUND**

### **SNS and Location Sharing**

The combination of two trends, personal GPS support devices and SNSs, has triggered the rise of the location-based SNS. It is a form of SNS that focuses on location sharing as the main interaction in the community (Yavuz & Toker, 2014). In addition to the existing functions of location-based platforms (e.g. navigation, nearby information search, location-based advertising), integrating the features of SNSs provides users with a greater variety of choices. Consistent with characteristics of SNSs proposed by Boyd and Ellison (2007), users in location-based SNSs can build and manage a public or semi-public profile and interact with other users in their list of connections. Specifically, people can check-in, which is sharing their location on a social site, view the location posts of their contacts, leave comments, and give ratings to the shared places. Later, besides established platforms specialized in location services such as Foursquare, Loopt, Wikitude.me, popular SNSs have also launched various location-related functions, including the Facebook location tag, Facebook Nearby, and Instagram Photo Maps.

Along with the rapid growth of this phenomenon, increasing research interest in location-based services is developing in the field of both marketing and information systems. Previous research has mainly drawn from the technology acceptance model (TAM) (Jang & Lee, 2018), the privacy calculus model (Chen et al., 2017; Sun, Wang, Shen, & Zhang, 2015), justice theory (Zhou, 2012), and the Big Five personality traits (Chorley et al., 2015). Many studies have attempted to investigate the motivation behind location sharing behavior. The findings have indicated online impression management (Beldad & Citra Kusumadewi, 2015), the need for popularity (Christofides, Muise, & Desmarais, 2009), and incentive (Patil et al., 2012; Zhao, Lu, & Gupta, 2012) are strong motives for users' decisions to share their location. Due to the sensitive nature of location information, it is undeniable that location sharing will raise privacy concerns among users. Location sharing has also been found to be the major risk perceived by location service users (Xu, Michael, & Chen, 2013). Information collection and secondary use are two dimensions of privacy concern that exert a significant impact on users (Zhou, 2011). A recent study by Jung and Park (2018) suggested cognition-affect appraisal as a promising framework in which to further study user privacy concerns related to location-based services. This study noted that different privacy concerns will be associated with various effects, which in turn give rise to different coping behaviors,

namely refusal, restricted use, complaints, negative word-of-mouth, no response, and mental disagreement.

### **Privacy Calculus Model**

The privacy calculus model, proposed by Laufer and Wolfe (1977), is widely applied to explain how an individual decides to reveal his/her personal information. Based on the model, one will consider the trade-off between expected risks and benefits that such disclosure brings. These two factors always exist simultaneously and impact privacy management (Waters & Ackerman, 2011). A decision to reveal information and how much information will be provided will depend on the degree of perceived benefits (Li, 2012). Extant literature has utilized this model to examine user disclosure behavior in various online contexts, such as mobile applications (Keith, Thompson, Hale, Lowry, & Greer, 2013; Wang et al., 2016), SNS (Dienlin & Metzger, 2016; Min & Kim, 2015; Xu et al., 2013) and e-commerce (Dinev & Hart, 2006).

With regard to location sharing behavior, prior studies have separately examined risks and benefits (Beldad & Citra Kusumadewi, 2015; Keith, Babb Jr, Furner, & Abdullat, 2010). By drawing upon the privacy calculus perspective, recent research has investigated these two issues using one integrated model. In a study on location-based SNSs in China, it was revealed that both utilitarian and hedonic benefits positively influence perceived benefits. Also, it was found that privacy risks exert a positive moderating effect on the relationship between perceived benefits and the propensity to disclose information (Sun et al., 2015). Zhao et al. (2012) demonstrated that incentive provision and interaction promotion are closely associated with personalization and connectedness, while privacy control and privacy policy significantly diminish users' privacy concerns about sharing location information. In a recent study conducted in Vietnam, Chen et al. (2017) found that connectedness, localtability, and personalization are three major aspects of benefits, while privacy concerns, as expected, significantly reduce disclosure intention. Interestingly, legislation awareness does not exert any impact on user privacy concerns or disclosure intention. Despite the fact that a variety of factors influencing users' perceived risks and benefits were found in the past literature, it has been relatively consistent that in the findings that compared to benefits, the extent to which risks impact user behavior tend to be smaller.

### **Antecedent of Perceived Risk**

#### **Privacy concern**

Since location-based services first became available, information privacy, especially, location information, has become a primary concern among users (Barkhuus & Dey, 2003). Information privacy reflects the extent to which one assumes full control of his/her personal data (Stone, Gueutal, Gardner, & McClure, 1983). Information privacy is commonly viewed as a multidimensional construct. Smith, Milberg, and Burke (1996) suggested that data collection errors, unauthorized secondary internal use, unauthorized secondary external use, and improper access are four main issues of related to concerns about information privacy. Later, Malhotra, Kim, and Agarwal (2004) argued that there are three dimensions of privacy concern, including collection, control, and awareness, that should be taken into consideration. While collection and secondary use are the main antecedents of perceived risk, errors significantly influence user trust in service providers (Zhou, 2011). Similarly, Raschke, Krishen, and Kachroo (2014) found that among the four types of privacy concerns mentioned above, collection and unauthorized use are the two factors diminishing the likelihood to disclose information among location-based service users.

Privacy concerns comprise one of the critical constructs influencing the behavioral intention of users in an online setting. Extant empirical research has shown extensive evidence supporting its direct relationship in numerous contexts (Chen et al., 2017; Dienlin & Metzger, 2016; Min & Kim, 2015; Yun et al., 2013). Besides a direct impact on user behavior, privacy concerns also have indirect influences on user behavior through trust, perceived usefulness, and perceived risk (Zhou, 2011). Privacy concern and privacy risk have been empirically examined and proved to have a positive correlation in prior studies on some information systems, including e-commerce (Fortes & Rita, 2016; Van Slyke, Shim, Johnson, & Jiang, 2006) and SNSs (Zhou & Li, 2014). Similarly, in the context of location-based SNSs, we posit that when users have a higher degree of concern users about a platform, they will perceive more risk. Hence, we propose the following hypothesis:

**H1:** Privacy concern has a positive impact on perceived risk related to location sharing.

### **Trusting belief**

Early studies on e-commerce mainly emphasized concerns related to privacy threats and argued that it is the main inhibitor of online transactions (Dinev & Hart, 2006). However, despite the existence of this risk, the volume of online transactions continues to grow. Trust is one of the cost-mitigating factors that can significantly contribute to lessening the influence of risk on user behavior. Existing evidence suggests that trust is a determinant of perceived risk (Beldad, de Jong, & Steehouder, 2011) and that it can directly facilitate user's disclosure intention (Bansal & Gefen,

2010; Krasnova, Veltri, & Günther, 2012), participation in web surveys (Fang, Shao, & Lan, 2009), online transactions (Beldad et al., 2011) online shopping intention (Pengnate & Sarathy, 2017), and repurchase likelihood (Hsu, Chang, Chu, & Lee, 2014). Different settings such as SNSs, e-government services, and online health system have been investigated. However, trust in the context of location-based information sharing has not been extensively investigated. Most of the studies on this subject mainly view trust as a single construct, for example, Jang and Lee (2018), Zhou (2012) and Xu et al. (2005). In this study, following Dinev and Hart (2006) approach, we view two aspects of trust: trust in the service provider (SNS) and trust in members on SNSs.

Since service providers have unlimited access to the personal data of users, their role is critically important in building user trust. The notion of trust towards service providers can be explained by employing two dimensions suggested in McLain and Hackman (1999): organizational ability and willingness to protect user's data. Ability manifests in the way a provider can adopt highly protective practices and have the competence to guarantee that use data is safe from harm. On the other hand, willingness means regardless of having full control of user information, the service provider does not disclose their personal data to another party without prior consent under any circumstances.

Location-related information is considered to be sensitive data in that once manipulated, it could be used to generate users' pattern of use and help to understand their behavior, lifestyle, habits, and reveal their personal identity (Xu, 2010). This data type possibly benefits location-based service providers, wireless carriers, and mobile devices suppliers (Beldad & Citra Kusumadewi, 2015). Given the sensitive nature of location information, in order to encourage users to share such information, they should be ensured that their data is warranted against prospective breaches and harmful manipulation. Belief in a service provider's ability and willingness to protect personal data tends to diminish users' perceived risk when come to sharing location on SNSs. Thus, we propose the following hypothesis:

**H2:** Trust in an SNS provider has a negative impact on perceived risk associated with location sharing.

Since one of the most prominent characteristics of SNSs is member interaction, it is important to take trust in other members into consideration in research on this topic. SNSs comprise open platforms where individual information is visible to a certain number of online participants. Users' activities can therefore be followed, secretly shared for the purpose of gossip, or manipulated for harmful purposes by other members

(Fusco, Michael, & Michael, 2010; Krasnova et al., 2012). In location-based SNSs, the location tracking or sharing function could provide data that could be used to trace the whereabouts or preferential routes of users, which might place a user in a risky situation. Recent research by Beldad and Citra Kusumadewi (2015) is the first study on location-based services looking into trust in other members. Their findings demonstrate that though not as statistically significant as trust in service providers, trust in other members still positively impacts the use of location sharing applications. In this study, we thus propose the following hypothesis:

**H3:** Trust in SNS members has a negative impact on perceived risks associated with location sharing.

### **Perceived Benefit**

#### **Impression management**

The notion of impression management or self-presentation first appeared in interpersonal behavior studies and is defined as the process by which people try to influence others' impressions of them in a favorable way (Leary & Kowalski, 1990). For example, in the SNS setting, users may share information or post photos with the aim of creating a socially desirable self-image such as beauty, popularity, thoughtfulness, or well-roundedness (Wang & Stefanone, 2013). In SNSs, people nearly have full control over what they want to disclose; hence, they tend to reveal information that is favorable to them. When people reveal their location, which could be any place they are visiting, they may want others to understand or have an impression of their lifestyle and social life (Wang & Stefanone, 2013). It should be noted that these places may not be those they strongly prefer but rather those they feel may be interesting to other users and help to create desirable self-images.

Past studies have revealed that a higher degree of self-disclosure on Facebook will result in the greater extent of exhibitionistic motivation (i.e. motivation to publicize one's individual private life) and later check-in behavior (Wang & Stefanone, 2013). A study conducted by Beldad and Citra Kusumadewi (2015) also demonstrated that among four types of proposed benefits from online location sharing activities (impression management, entertainment, information search, information dissemination), only impression management and entertainment significantly influence location sharing among Indonesian students. In this study, we propose the following hypothesis:

**H4:** Impression management has a positive impact on perceived benefits associated with location sharing.



## **Incentive**

Incentives can be defined as rewards given to participants for taking part in an activity. Online services usually encourage user involvement by offering monetary or nonmonetary incentives, such as gaining extra points for free upgrades, earning badges or virtual items, or downloading some specialized features (Zhao et al., 2012). With regard to online information disclosure, users may be asked to share specific information to receive rewards, which could be financial advantages (e.g. cash pay-outs or reductions in service charges) or information benefits (e.g. access to information sources that are not widely public) (Sheehan & Hoy, 2000). Recently, check-in on SNSs has been adopted by many restaurants, clothing shops, and many other stores as a way to promote their services. Customers are asked to check-in in exchange for a specific discount or free items. By this way, service providers can capitalize on their customers' SNSs, so more people will know about their services.

From a cost-benefit perspective, incentive is explained as the compensation for a user's loss of privacy as well as benefits derived from disclosing private information. Prior studies on location-based services have found that the practice of offering compensation or incentives could influence users' perceived benefits, which in turn may increase the likelihood of disclosing location information (Koohikamali et al., 2015; Xu, Teo, Tan, & Agarwal, 2009; Zhao et al., 2012). In Zhao et al. (2012) study on Digu, a location-based website in China, among different benefit and privacy factors, incentive provision was found to be the strongest antecedent of a user's propensity to reveal information. In another qualitative study, participants stated firmly that the reasons for using Foursquare, a location-based social network, is their special offers or earning badges, which makes them feel proud of themselves and as if they are in a competitive game (Lindqvist, Cranshaw, Wiese, Hong, & Zimmerman, 2011). Thus, we argue that the existence of incentives will make people more aware of the benefits they may be able to gain when making a decision to share location information on a social network. The next hypothesis is as follows:

**H5:** Incentive has a positive impact on perceived benefits associated with location sharing.

## **Privacy calculus and attitude toward location sharing**

Privacy risk is defined as a situation where personal information is leaked and used for harmful purposes (Xu et al., 2005; Zhou, 2012). In the context of SNSs, this risky situation could be caused by a lack of competence and willingness on the part of the service provider or illegal or unethical purposes of third party or other users within one's

social network. A considerable body of study on disclosure behavior in an online setting has empirically investigated the relationship between perceived risk and the behavioral intentions of users. Privacy risk has been found to negatively influence user disclosure behavior on mobile application (Keith et al., 2013), on e-government transactions (Beldad et al., 2011), intention to purchase online (Fortes & Rita, 2016), adopt internet banking services (Giovanis, Binioris, & Polychronopoulos, 2012), and continuance usage of mobile SNSs (Zhou & Li, 2014). In addition to this direct relationship, a recent study also demonstrated the potential moderating effect of privacy risk on the positive correlation between perceived benefit and intention to disclose location information among Chinese users (Sun et al., 2015). Raschke et al. (2014) argued that perceived privacy risk will negatively lead to the likelihood of sharing location information via concerns related to collection. To briefly summarize, we posit that the more risk users associate with the idea of sharing their location on SNSs, the less willing they will be to do so. Thus, the next hypothesis is as follows:

**H6:** Perceived risks associated with location sharing have a negative impact on attitudes toward sharing location.

According to the privacy calculus model, one will disclose his or her personal information only when the greater benefit of sharing is perceived. Previous studies have revealed a variety of benefits explaining location sharing behavior. A user may feel that sharing information about past locations could positively impact society in that it helps others reduce the time required for searching, and they will be more reviews to consider before going to a given place (Koochikamali et al., 2015). Besides benefits users believe that they can contribute to society, they will choose to reveal information due to the advantages they can gain. When users share their location information in their network, they can gain the benefit of incentive (Koochikamali et al., 2015), impression management, entertainment (Beldad et al., 2011; Wagner et al., 2010), personalization, and connectedness (Zhao et al., 2012). Prior empirical research employing the privacy calculus model has consistently demonstrated that the impact of perceived benefit is stronger than privacy risk (Chen et al., 2017; Sun et al., 2015; Xu & Gupta, 2009; Zhao et al., 2012). In this study, we also argue that people will have a more favorable attitude toward information disclosure on location-based SNSs if they believe in the value of such a practice. We thus propose the following hypothesis:

**H7:** Perceived benefits associated with location sharing have a positive impact on attitude toward sharing location.

### **Attitude toward location sharing and intention to continue sharing**

Information system continuance is a critical construct in the literature on information systems, and is defined as the extent to which users plan to continuously use such systems in the future. While the initial adoption of an information system is an important first step, the factor determining the eventual success of an electronic firm lies in continuance usage (Bhattacharjee, 2001). This is because additional expenses for market research, new account setup, promotional campaigns, exploring new markets, or gaining new customers usually generates much higher cost than retaining current customers (Bhattacharjee, 2001). In addition, in the era of technology, with a high rate of new product development, the market for technology products is highly competitive. Customers can easily adopt new services but also can quickly switch to another product if their experience is unsatisfactory. Encouraging users to continue using is considered to play a central role in firm survival. Given the above reasons, it is of critical importance that more effort is spent examining the issue of continuance usage.

The relationship between attitude and continuance usage intention has been well examined in several studies on information systems (Chen & Li, 2010; Hsu, Yen, Chiu, & Chang, 2006; Lee & Tsai, 2010). In the context of location-based services, we also argue that a more favorable attitude will lead to a greater likelihood of continuously sharing location information on social networking sites. Thus, the next hypothesis is:

**H8:** Attitude toward location sharing has a positive impact on Continued sharing of location.

### **Moderation effect of positive feedback and perceived promotion innovativeness**

Thus far, the moderating effect of user behavior has not received much attention in the literature on location sharing behavior. Only a few moderators have been integrated into the research model used in recent studies. For instance, innovativeness has been found to moderate the relationship between reputation, trust, entertainment, and user attitudes towards LBS services (Jang & Lee, 2018), and privacy risk has been shown to moderate the link between users' perceived benefits and self-disclosure behavior (Sun et al., 2015). In addition, the positive impact of performance expectancy on continuous usage intention will be stronger in those with lower levels of privacy concern (Yun et al., 2013). In this study, we propose investigating two prospective moderators: positive feedback and promotion innovativeness. To date, these two factors have not been studied extensively in the context of location sharing behavior.

### **Positive Feedback**

In a location-based SNS, feedback is provided about who is requesting a user to share his/her location (Tsai et al., 2009). Awareness that shared content is viewed by many people will potentially make users feel that they are helping their online community, which in turn could encourage them to be more proactive on the platform, thus increasing their benefits and degree of loyalty (Ha & Chen, 2016). Furthermore, making historic activities visible is argued to be one of three characteristics of a “socially translucent system” designed to support communication via computer networks (Erickson & Kellogg, 2000). Site transparency, in turn, will help to decrease privacy concerns related to the misuse of personal information. In a study adopting field deployment of a mobile location sharing system, the group having access to a history of requests was found to exhibit greater levels of comfort and a lower degree of privacy concerns than a group given no feedback (Tsai et al., 2009). Specifically, participants in the former group felt comfortable with being located not only by those on their social contact list but also by strangers.

It should be noted that the presence of feedback should be carefully taken into consideration. The reason is that various feedback content, which could have no meaning or offer negative or positive feedback, could exert a distinct impact on user behavior (Johnson & Van Der Heide, 2015). Hence, in the scope of this study, we only focus on investigating positive feedback. When a more favorable attitude is derived from receiving positive feedback, it will be more likely that users will continue location sharing in the future (Tsai et al., 2009). Further, favorable attitudes derived from receiving positive feedback may increase satisfaction with the system, a key factor that positively influences continuance usage related to information systems (IS) (Chen, Elakhdary, & Ha, 2019; Limayem & Cheung, 2008; Mouakket, 2015). Based on the above discussion, we propose the following hypothesis:

**H9:** Positive feedback for users’ location sharing has a positive impact on the relationship between attitude towards location sharing and continued sharing of location.

### **Perceived promotion innovativeness**

Innovation plays an indispensable role in creating a sustainable competitive advantage for any firm, especially in the information technology industry (Mahmod, Ibrahim, & Yousif, 2010). However, in order for a firm to gain such an advantageous position, it is important that users or customers perceive the offering as innovative (O’Cass & Carlson, 2012). The extent to which one subjectively assesses a product or service as having adopted innovative features is defined as perceived innovativeness (Wu, Balasubramanian, & Mahajan, 2004). Existing literature has provided ample evidence

of the impact of perceived innovativeness on users' behavioral outcomes, such as technology adoption (Chihui, 2009; Seliaman & Al-Turki, 2012), willingness to purchase (Fu & Elliott, 2013; Lafferty & Goldsmith, 2004), and the seller-buyer relationship (Falkenreck & Wagner, 2011).

Past studies on location-based SNSs have investigated the moderating effect of personal innovativeness (i.e. users' tendency to experience new services) on location awareness and attitude towards the service. In this study, we approach innovativeness in the sense of a service provider's characteristics. As mentioned before, marketers are increasingly adopting the sharing of location as a way to help more people know about their businesses. Besides earning incentives, consumers will be more willing to check-in their location if they perceive the innovativeness of the service they are investigating and want to let others know and encourage them to give it a try. The more changes and unique features of a service an individual perceive over time, the more likely he/she will be to continue sharing its location on a SNS.

**H10:** Perceived promotion innovativeness has a positive impact on the relationship between attitude towards location sharing and continued sharing of location.

## **RESEARCH METHODOLOGY**

### **Sample and Data Collection Procedure**

We collected data using an online survey in the USA due to the popularity of location-based SNSs here. Using the MTurk platform, we obtained 230 responses, and after data cleaning, we retained 210 samples for further analysis. All participants used Facebook as the platform on which to share their locations. The demographic data of the respondents is shown in Table 1.

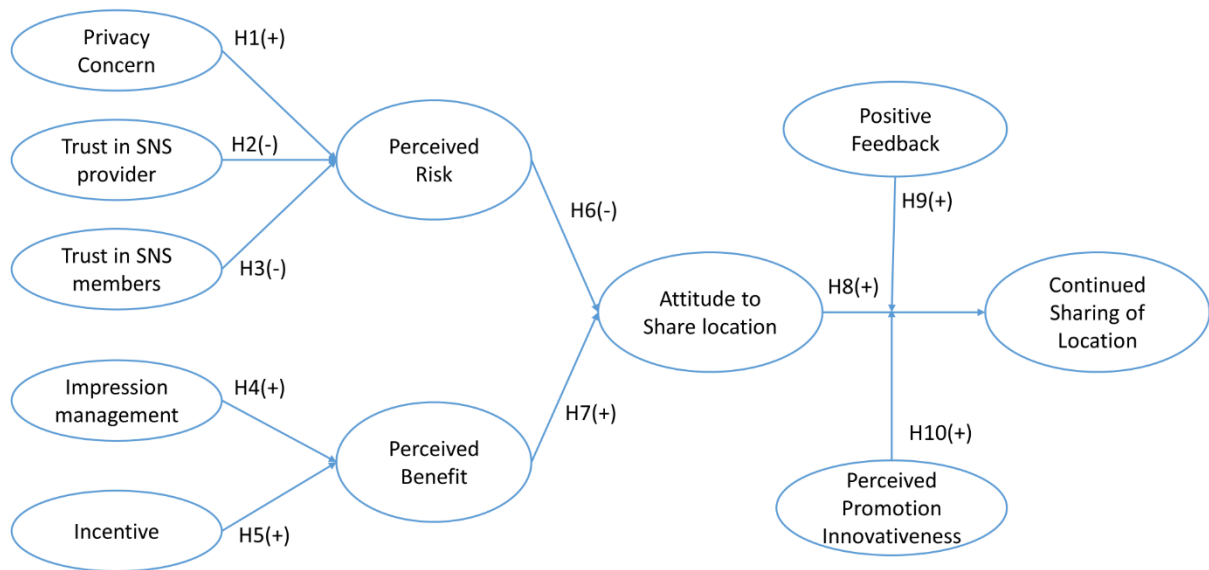


Figure 1. Research Framework

Table 1. Demographics

Characteristics	Frequency (N=210)	Percent (100%)
<b>Gender</b>		
Male	84	40.0
Female	126	60.0
<b>Age</b>		
Under 20	3	1.4
21–30	89	42.4
31-40	74	35.2
41-50	23	11.0
> 50	21	10.0
<b>Education</b>		
High school or below	47	22.4
Bachelor’s degree	123	58.6
Master’s degree	34	16.2
Doctoral degree	6	2.9
<b>Employment Status</b>		
Unemployed	19	9.0
Part-time employment	35	16.7
Student	12	5.7
Full-time employment	144	68.6

<b>Characteristics</b>	<b>Frequency (N=210)</b>	<b>Percent (100%)</b>
<b>Working experience (years)</b>		
1-5	63	30.0
5-10	54	25.7
10-20	42	20.0
> 20	50	23.8
<b>Income</b>		
Less than USD 500	14	6.7
USD 500–1000	26	12.4
USD 1001–2000	44	21.0
USD 2001–3000	62	29.5
USD 3000-4000	20	9.5
Above 4000	44	21.0
<b>Average time spent using social network sites per day</b>		
< 1 hour	35	16.7
From 1 to 2 hours	83	39.5
From 2 to 3 hours	53	25.2
From 3 to 5 hours	23	11.0
> 5 hours	16	7.6
<b>Frequency of check-in per month</b>		
fewer than 1 time per month	47	22.4
1-2 times per month	89	42.4
3-4 times per month	36	17.1
5-6 times per month	17	8.1
7-8 times per month	6	2.9
More than 8 times	15	7.1

### **Measurement Items**

We adapted and revised the measurement items from previous studies and used a 7-point Likert scale (ranging from Strongly disagree to Strongly agree) for these measurement items (Table 2).

Table 2. Measurement Items

Construct	Measurement	Source
Privacy Concern	pc1. I am concerned about my privacy. pc2. I am concerned about strangers knowing my location. pc3. I am concerned about people I do not know obtaining my personal information from my online activities. pc4. I am not worried about people I don't know obtaining my location (R). pc5. I am concerned about being tracked based on my location by the SNS site application I use.	(Buchanan, Paine, Joinson, & Reips, 2007)
Trust to SNS provider	tp1. The SNS provider I'm using is competent in protecting my location information. tp2. The SNS provider I'm using has the knowledge of how to protect users' location information. tp3. The SNS provider I'm using knows how to protect its users' privacy. tp4. The SNS provider I'm using uses the right technology to protect my information from third-party access.	(Beldad & Citra Kusumadewi, 2015)
Trust to SNS member	tm1. In general, users on my SNS do care about my privacy. tm2. Users on my SNS are sincerely concerned about my privacy. tm3. Users on my SNS will not protect my privacy (R).	(Beldad & Citra Kusumadewi, 2015)
Impression Management	im1. Sharing my location on SNSs makes me a likable person. im2. Sharing my location on SNSs contributes to my image as a cool person. im3. Sharing my location on SNSs makes me socially desirable. im4. Sharing my location on SNSs improves my image as a pleasant person.	(Beldad & Citra Kusumadewi, 2015)
Incentive	ic1. Locations I visit often offer instant discounts for "checking-in" when I check in on SNSs. ic2. Locations I visit offer future coupons when I check in on SNSs.	(Koohikamali et al., 2015);
Perceived benefit	be1. I benefit others when I check-in on SNSs. be2. Using locally-based SNS applications offers many advantages to society. be3. When I check in on SNSs, others benefit from the information that I share.	(Koohikamali et al., 2015);



Construct	Measurement	Source
	be4. In general, when people check-in on SNSs, they help others around them.	
	be5. Using locally-based SNS applications is a beneficial activity for society as a whole.	
	be6. Overall, I feel that location check-in on SNSs is beneficial.	
Perceived Risk	rk1. Disclosing my location information on SNSs may result in many unpredictable problems. rk2. Disclosing my location information on SNSs is risky. rk3. Disclosing my location information to this on SNSs may result in potential losses.	(Zhou, 2013)
Positive feedback	pf1. When I share my location on SNSs, I often get positive feedback from others. pf2. When I share my location on SNSs, my friends often have a good word for me. pf3. When I share my location on SNSs, my friends often give me some "likes".	(Liu & Brown, 2014; Wang et al., 2018)
Perceived promotion innovativeness	pi1. This restaurant implements an innovative marketing program. pi2. This restaurant offers innovative deals. pi3. This restaurant has an innovative promotion.	(Kim, Tang, & Bosselman, 2018)
Attitude to Share Location	at1. It is a good idea to share my location on SNSs. at2. I believe that sharing my location on SNSs is wise. at3. I have a positive attitude toward sharing my location on SNSs. at4. Sharing my location on SNSs is fun. at5. I like to share my location on SNSs.	(Koohikamali et al., 2015);
Continued sharing of location	ac1. I check-in every time I use an SNS. ac2. I rarely "check-in" when I use an SNS. fre. Frequency check in last month	Koohikamali et al. (2015)

## RESULTS AND ANALYSIS

### Descriptive Statistics, Reliability and Discriminant Validity

In this study, SmartPLS 3.0 (Ringle, Sven, & Jan-Michael, 2015) was used for the data analysis. A CFA was performed to assess the reliability and discriminant validity of the measurement. Following criteria suggested by Hair, Ringle, and Marko (2011), we found all the standardized indicator loadings to be higher than 0.70. The Cronbach's

alpha and composite reliability (C.R.) of all constructs also were greater than 0.7 and thus guaranteed high reliability of the measurements (Bagozzi, 2011; Fornell & Larcker, 1981). The average variance extracted (AVE) of all constructs was greater than the suggested criterion 0.50 (Chin, 1998), which showed that all constructs met the requirements of convergent validity. Table 3 shows the results of the descriptive statistics and reliability measurements.

Table 3. Descriptive Statistics and PLS-CFA Results

Construct	Items	Mean	SD	Factor Loading	AVE	C.R.	Cronbach's Alpha
Privacy Concern (PC)	pc1	4.895	1.866	0.832	0.750	0.937	0.916
	pc2	5.005	1.903	0.917			
	pc3	4.829	1.922	0.897			
	pc4r	4.848	2.018	0.824			
	pc5	4.876	1.895	0.856			
Trust in SNS provider (TP)	tp1	4.343	1.585	0.906	0.763	0.928	0.906
	tp2	4.748	1.540	0.801			
	tp3	4.633	1.609	0.878			
	tp4	4.471	1.596	0.904			
Trust in SNS member (TM)	tm1	4.400	1.640	0.780	0.719	0.884	0.817
	tm2	4.295	1.568	0.886			
	tm3r	4.210	1.732	0.873			
Impression Management (IM)	im1	3.567	1.774	0.884	0.852	0.958	0.942
	im2	3.514	1.825	0.929			
	im3	3.610	1.848	0.935			
	im4	3.776	1.804	0.944			
Incentive (IC)	ic1	3.581	2.011	0.970	0.938	0.968	0.934
	ic2	3.724	2.059	0.967			
Perceived benefit (PB)	be1	3.429	1.855	0.875	0.815	0.963	0.954
	be2	3.895	1.824	0.852			
	be3	3.819	1.816	0.894			
	be4	3.729	1.876	0.939			
	be5	3.786	1.821	0.924			
	be6	3.719	1.828	0.928			
Perceived Risk (PR)	rk1	4.833	1.670	0.924	0.842	0.941	0.906
	rk2	4.795	1.672	0.929			

Construct	Items	Mean	SD	Factor Loading	AVE	C.R.	Cronbach's Alpha
Positive feedback (PF)	rk3	4.571	1.708	0.898	0.877	0.955	0.930
	pf1	4.352	1.774	0.957			
	pf2	4.300	1.739	0.942			
	pf3	4.724	1.717	0.910			
Perceived promotion innovativeness (PI)	pi1	4.719	1.519	0.935	0.886	0.959	0.936
	pi2	4.657	1.603	0.940			
	pi3	4.681	1.616	0.949			
Attitude toward Sharing Location	at1	3.507	1.738	0.920	0.817	0.957	0.944
	at2	3.371	1.818	0.910			
	at3	3.638	1.844	0.927			
	at4	3.948	1.920	0.835			
	at5	3.610	1.874	0.924			
Continued sharing of location. (CU)	Fre	2.481	1.377	0.835	0.664	0.855	0.751
	ac1	2.910	1.965	0.881			
	ac2r	5.229	1.797	0.721			

Table 4. Correlations between research constructs

	<b>ATT</b>	<b>CU</b>	<b>IM</b>	<b>IC</b>	<b>PB</b>	<b>PI</b>	<b>RK</b>	<b>PF</b>	<b>PC</b>	<b>TM</b>	<b>TP</b>
<b>ATT</b>	0.904										
<b>CU</b>	0.714	0.815									
<b>IM</b>	0.737	0.560	0.923								
<b>IC</b>	0.494	0.467	0.431	0.968							
<b>PB</b>	0.809	0.687	0.692	0.627	0.903						
<b>PI</b>	0.523	0.419	0.390	0.303	0.540	0.941					
<b>RK</b>	-0.212	-0.124	-0.048	0.142	-0.053	-0.105	0.917				
<b>PF</b>	0.692	0.483	0.629	0.342	0.663	0.504	-0.068	0.936			
<b>PC</b>	-0.279	-0.155	-0.081	0.173	-0.074	-0.128	0.645	-0.127	0.866		
<b>TM</b>	0.268	0.209	0.058	0.134	0.233	0.238	-0.234	0.136	-0.173	0.848	
<b>TP</b>	0.519	0.369	0.342	0.335	0.469	0.286	-0.100	0.375	-0.142	0.497	0.873

\* Diagonal elements (in bold) are the square root of the average variance extracted

To assess the discriminant validity of measurements, we first used the Fornell-Larcker criterion. The results shown Table 4 indicate that the square root of the AVE

of each construct was greater than other inter-construct correlations, which means discriminant validity was not an issue. We also use the Heterotrait-Monotrait ratio (HTMT) to assess the discriminant validity (Henseler, Ringle, & Sarstedt, 2015). The result showed that all Heterotrait-Monotrait ratios of the correlations between the constructs were smaller than the threshold of 0.85, which indicated that discriminant validity was not an issue for the constructs.

### Common Method Bias

We used two tests to determine common method bias (CMB) to confirm the validity and quality of our data. First, we used Harman's one-factor test (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003), and the result of this test showed that the largest factor explained only 26% of the variance, which means CMB was not a serious issue. Second, we used a collinearity assessment approach (Kock, 2015) to indicate CMB. The result from the PLS showed that all VIF values generated for all constructs in a model were lower than the 3.3 threshold, which means the model was free from CMB (Kock, 2015).

### Hypothesis Testing Results

Using SmartPLS 3.0 (Ringle et al., 2015), we estimated the path coefficient to test the hypotheses. To assess the significance of the path coefficients, we followed Hair et al.'s (2011) recommendation, with 5,000 bootstrap samples. The results of the PLS data analysis and hypotheses testing are shown in Table 5.

Table 5. Results of the PLS Data Analysis and Hypotheses

Hypothesis	Relationship	$\beta$	t	Results
H1	Privacy Concern (+)→Perceived Risk	0.627***	12.233	Supported
H2	Trust in SNS provider (-)→ Perceived Risk	0.069	1.027	Not supported
H3	Trust in SNS members (-)→ Perceived Risk	-0.159*	2.441	Supported
H4	Impression mng. (+)→Perceived Benefit	0.518***	8.482	Supported
H5	Incentive (+)→Perceived Benefit	0.403***	7.004	Supported
H6	Perceived Risk (-)→Attitude to LS	-0.169***	3.723	Supported
H7	Perceived Benefit (+)→Attitude to LS	0.800***	23.899	Supported
H8	Attitude toward LS(+)->Continued usage	0.717***	16.237	Supported

\* Note: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ ; using a significance level of 0.05, critical ratios ( $t$ -value)  $> 1.96$ .

H1 was supported because privacy concern positively impacts perceived risk ( $\beta=0.627$ ,  $p<0.001$ ). Trust in the SNS provider and in SNS members was expected to have a negative impact on perceived risk. However, the results showed that only trust in SNS members had that impact ( $\beta=-0.159$ ,  $p<0.05$ ). Therefore, H3 was supported, and H2 was not supported ( $\beta=0.069$ ,  $p>0.05$ ). H4 and H5 were supported since both impression management and incentive positively influence perceived benefit ( $\beta_{IM}=0.518$ ,  $p_{IM}<0.001$  and  $\beta_{IC}=0.518$ ,  $p_{IC}<0.001$ ). Perceived risk had a negative impact on attitude toward location sharing ( $\beta=-0.169$ ,  $p<0.001$ ), which means H6 was supported. H7 was supported since perceived risk had a strong impact on attitude toward location sharing ( $\beta=0.800$ ,  $p<0.001$ ). Finally, H8 was also supported since attitude toward location sharing highly influenced intention to engage in continued sharing of location ( $\beta=0.717$ ,  $p<0.001$ ). Figure 2 also illustrates these hypotheses testing results in the conceptual model.

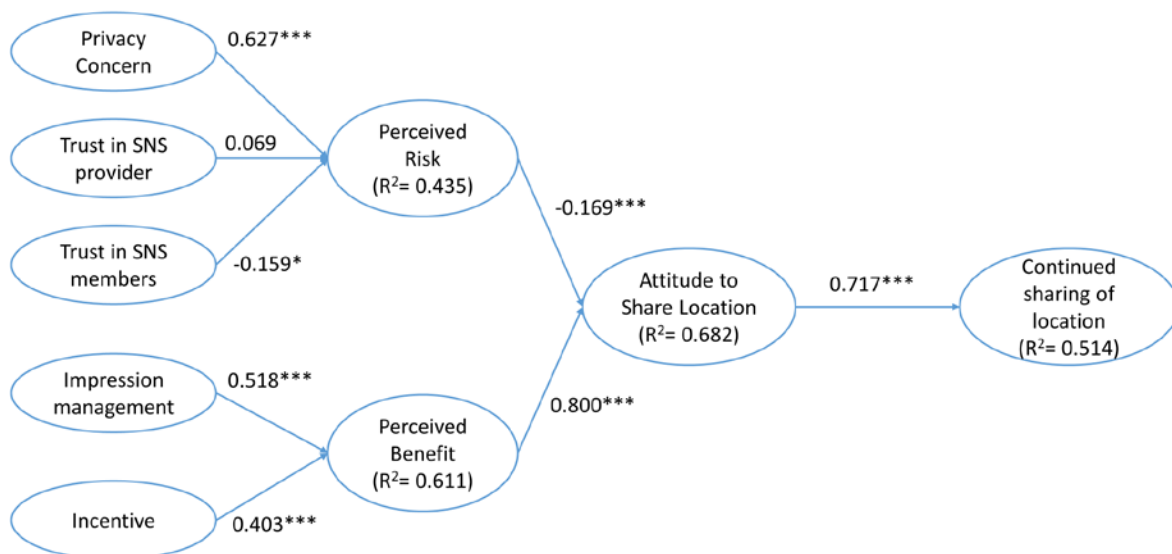


Figure 2. The results of PLS-SEM

### Moderating effects and Control Variables

To test the moderating role of positive feedback and perceived promotion innovativeness on the relationship between attitude and continued sharing of location, as well as the role of the control variables on continued sharing of location, we used hierarchical regression analysis. The results in Table 6 show that positive feedback (PF) and perceived promotion innovativeness (PI) had a positive impact on the relationship between attitude toward location sharing and continued sharing of location ( $\beta_{PF \times ATT}$

=-0.215,  $p_{PF \times ATT} < 0.001$  and  $\beta_{PI \times ATT} = 0.195$ ,  $p_{PI \times ATT} < 0.001$  respectively). Therefore, H9 and H10 were supported. Concerning the impact of the control variables on continued sharing of location, we found that gender ( $\beta = -0.114$ ,  $p < 0.05$ ), education ( $\beta = 0.156$ ,  $p < 0.05$ ) and average time spent using social network sites per day ( $\beta = 0.365$ ,  $p < 0.001$ ) had significant impacts.

Table 6. Hierarchical regression results

Variables	Dependent: Continuous to Share Location				
	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	-0.144*	-0.082	-0.090	-0.086	-0.086
Age	0.111	0.071	0.056	0.099	0.103
Education	0.156*	0.140*	0.144*	0.143*	0.158
Income	-0.018	-0.068	-0.061	-0.059	-0.032
Work Exp.	-0.161	-0.063	-0.049	-0.070	-0.070
Time on SNSs	0.365***	0.217***	0.222***	0.226***	0.215
ATT		0.394***	0.346***	0.487***	0.411***
PI		0.105	0.178*		
PF				-0.059	0.053
PI x ATT			0.195***		
PF x ATT					0.215***
R-squared	0.212	0.385	0.419	0.379	0.416
F values	9.083	15.658	15.940	15.248	15.745
(p value)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)

Note: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ ; ATT: Attitude toward Location sharing; PI Perceived promotion innovativeness; PF: Positive Feedback

## DISCUSSION AND IMPLICATIONS

Location-based technologies and SNSs not only help users obtain local recommendations but also benefit businesses and help them promote their services effectively. Location sharing on SNSs provides businesses with many opportunities to foster eco-friendly business activities by increasing the efficiency of location promotion (Jang & Lee, 2018). Therefore, it is crucial to research factors affecting SNS users' attitudes toward sharing their location as well as factors that help sustain that behavior. In line with the privacy calculus model, the risk-benefit assessment in this study indicated its significant impact on the attitude of SNS users when sharing their location. In detail, H6 and H7 show that perceived risk negatively affects attitude toward location sharing while perceived benefit positively affects that attitude. These findings are

consistent with many previous studies that demonstrated that the impact of perceived benefit is stronger than that for privacy risk (Chen et al., 2017; Sun et al., 2015; Xu & Gupta, 2009; Zhao et al., 2012). With H8 supported, this study has provided empirical evidence that a favorable attitude will strongly lead to continued sharing of location information on SNSs.

When it comes to factors affecting perceived risk, only privacy concern and trust in SNS members were found to play their important roles since H1 and H3 were supported. Surprisingly, H2 was not supported, which indicated that there is no significant relationship between trust in SNS providers and perceived risk, which is in contrast to the findings of Beldad and Citra Kusumadewi (2015). This may have been due to the fact that this technology is mature, and the number of unreliable service providers has decreased. Now, more providers in the market are reputable than was the case in the past. Therefore, users don't worry about privacy issues related to the provider although they still have other privacy concerns. H4 and H5 were supported, which demonstrated that impression management and incentive have a highly positive effect on perceived benefits. These findings are also consistent with previous research on impression management (Beldad & Citra Kusumadewi, 2015) and incentive (Koohikamali et al., 2015; Xu et al., 2009; Zhao et al., 2012), which showed that impression management and incentive offer the greatest compensation for users' loss of privacy. The most interesting finding was that positive feedback has a positive impact on the relationship between attitude toward location sharing and intention to continue sharing of location (H9). This finding further supports the idea of Tsai et al. (2009), who suggested that receiving feedback is important to users' willingness to share their location. Also, different from impression management and incentive, positive feedback is mainly built from past experiences, which makes users feel they are being helpful to the online community and therefore tends to make them more proactive on SNSs. Finally, the current study found that perceived promotion innovativeness has a positive impact on the relationship between attitude toward location sharing and intention to continue sharing location (H10). These results also support the idea that perceived innovativeness has an impact on the behavioral outcomes of users (Chihui, 2009; Seliaman & Al-Turki, 2012).

From a theoretical perspective, this study offered some important implications. First, this study contributes to the post-adoption literature when it investigates the relationship between attitude toward sharing location to intention to engage in continued location sharing behavior. When the location sharing technology was newly adopted, initial factors made location sharing inevitable. However, in today's fast-

growing technology environment, the eventual success of a service provider lies in continuance usage (Bhattacharjee, 2001), and investigation of this phenomenon is crucial. Second, to the best of our knowledge, there have been only a few studies investigating the impact of positive feedback and perceived promotion innovativeness in the location sharing context. Previous research mostly studied benefit factors that resulted in location check-in but didn't pay attention to the factors that would sustain that behavior. Thus, the investigation of the moderating effects of positive feedback and perceived promotion innovativeness could also contribute to the post-adoption literature. Third, we also enrich the privacy calculus literature by providing evidence of cost-benefit views of location sharing behavior under a single integrated model (Sun et al., 2015; Zhao et al., 2012).

From a managerial perspective, the findings reaffirmed that businesses should pay more attention to consumer perceptions of risk and benefit related to location sharing to promote their services more effectively on SNSs. Due to the fact that perceived benefit is much stronger than privacy risk, service providers should increase investments that provide more incentives that will entice customers. Specifically, this study also suggested that businesses can attract customers to come back and sustain their competitive advantage by increasing their perceived promotion innovativeness as well as giving customers more positive feedback related to their sharing their location. Companies should continuously change check-in promotion methods, thus diversifying the incentive for customers. In addition, companies could also rent third-party sources to give customers who shared their location positive feedback because they feel comfortable with being located not only by those on their social contact list but also by strangers (Tsai et al., 2009).

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