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Understanding the intention to use location-based services: a comprehensive theoretical framework

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Abstract

The present article delves into the realm of ubiquitous technologies, specifically focusing on the continued usage intention of location-based services (LBS). It integrates various theoretical frameworks to develop a comprehensive model that truly encompasses the factors that impact this phenomenon. The proposed model is based on the Awareness System Acceptance Model by Zweig and Webster (2002), with the addition of various relevant variables: LBS characteristics, privacy concerns, and expectation-confirmation elements. By exploring the many aspects of the LBS ecosystem, this research aims to bridge the gap in understanding the post-adoption context of ubiquitous technologies. Future studies on this subject will utilize this model.

Keywords: ubiquitous technologies, location-based services (LBS), usage intention, theoretical framework

Introduction

The use of ubiquitous technologies is currently relevant. Modern systems prioritize interactivity, usability, flexibility, and connectivity to represent a valuable and functional technology for their users (Vodanovich et al., 2010). In that way, ubiquitous technologies are characterized by being embedded in users' natural movements and interactions with their physical and social environments and for organizing and mediating social interaction wherever and whenever these situations occur (Lyytinen & Yoo, 2002).

From a consumer perspective, a location-based service (LBS) is considered a particular case of ubiquitous technology. This is an ever-growing market, valued at $26.22 billion in 2023 and expected to reach $129.71 billion by 2032 (Fortune Business Insights, 2024). Said growth is influenced by the increasing usage of social media and smartphones, as well as the ease of access to GPS technology (SNS Insider, 2023). By using their users' locations and preferences, LBSs provide specific services and information that fulfill their requirements (Zhou, 2015). Examples of LBSs are usually mobile applications related to advertisement, transport services, emergency evacuation, and location check-in services (Kim et al., 2021; Zhou, 2015). Globally, the services with the most users are transportation and logistics applications (Fortune). Nonetheless, the fact that LBSs store sensitive information – which includes mobile phone data, GPS data, social media data, proximity data, and more – leads to concerns about breaches in privacy (Jiang et al., 2021; Kim et al., 2021; Rodríguez-Priego et al., 2022). Because ubiquitous systems keep growing, specifically LBSs, it is necessary to study them in greater detail.

Some theoretical models could explain the continued use of ubiquitous technologies. However, the literature in this context is fragmented, so it does not fully explain this behavior. For example, Zweig and Webster (2002) evaluate a model explaining the adoption of invasive systems. Although, by not being a

mobile technology and focusing only on its use, it cannot be applied adequately to the context of ubiquitous technologies. Likewise, privacy concern literature in this context is abundant in explaining ubiquitous system adoption, not its continuance. From continued usage literature, Bhattacherjee (2001) proposed a model that has been widely proven in a variety of contexts, but it has not been evaluated in a ubiquitous system context yet.

To bridge the gap in the literature, this research aims to develop a model that contemplates the theoretical frameworks mentioned above to explain the continued usage intention of ubiquitous systems, specifically the case of LBSs.

Theoretically, it is hoped that this research will provide a conceptual framework that improves the understanding of ubiquitous technologies in a post-adoption context. On a practical level, this study's findings would help managers and designers of LBSs improve the user experience on their platforms to encourage continuous use.

To this end, the article is structured as follows: first, a literature review is presented, where location-based services and the factors that would impact their continued use are explored. Then, the research model is established and evaluated, and finally, the tentative methodology of the research is stated.

Theoretical Background

This section includes the literature review about location-based services and the leading theory used to propose a novel theoretical model: The Awareness System Acceptance Model referred to by Zweig and Webster (2002).

Location-based service technology continuance use

A location-based service is a mobile technology that provides users with optimal information and value-added services based on location and preference (Kim et al., 2021; Xu & Teo, 2004; Zhou, 2015). This technology benefits users through the ubiquitous and personalized information offered, reducing the effort spent on information searching (Zhou, 2015) and enhancing their utility and mobility (Xu et al., 2005). LBSs include safety-related services, location-based gaming, outdoor and indoor navigation, asset tracking, city guides, traffic alerts, location-based advertisements, point-of-interest recommendations, and location check-in services (Gupta et al., 2011; Kim et al., 2021; Zhou, 2015). Jiang et al. (2021) mention two types of LBSs. On the one hand, Snapshot LBSs receive location information when given directly by the user, and they provide personalized responses according to said location (Jiang et al., 2021). One example could be when users search for specific places in their vicinity, such as restaurants. On the other hand, Continuous LBSs receive location data continuously or periodically without users manually updating their information (Jiang et al., 2021). This is the case with navigation apps like Google Maps, which report traffic and effective routes for the trip.

While it may seem a helpful technology, LBS usage continuance still has certain barriers (Junglas & Spitzmuller, 2006; Zhou, 2015). For instance, many users have reported privacy concerns and perceived risks of potential confidentiality breaches, as location information is perceived as highly private (Jiang et al., 2021; Junglas & Spitzmuller, 2006; Rodríguez-Priego et al., 2022; Xu & Teo, 2004; Zhou, 2015). These worries are exacerbated by some LBS companies sharing collected location data with third parties for research or profit (Jiang et al., 2021; Kim et al., 2021). Thus, the intention to continue using this type of technology is compromised.

Research on LBSs has employed many IT acceptance theories to explain why users adopt this technology and, indirectly, why they continue using it. Theoretical frameworks such as the Technology Acceptance Model (Davis et al., 1989), Task Technology Fit (e.g., Junglas et al., 2008), and perceived value (e.g., Yang & Lin, 2017) have been employed in the context of LBS research. Likewise, some studies have focused on explaining the antecedents of privacy concerns and perceived risk (or trust beliefs) to understand LBS adoption or continuance use intention (Rodríguez-Priego et al., 2022). For example, privacy concerns are associated with psychological assurance of control (Xu & Teo, 2004), technology quality in terms of information provided, system, and service (Zhou, 2015), and perceived justice in the implementation of the LBS (Zhou, 2016).

Monitoring system acceptance literature

To understand individuals' acceptance of pervasive and ubiquitous technologies such as location-based services, the Theory of Awareness System Acceptance proposed by Zweig and Webster (2002) results in a comprehensive model that integrates the functionality of a system with the psychological dimension of its acceptance (Zweig & Webster, 2002).

The authors use largely explored models of technology acceptance literature to explain the intention of using an awareness system. Some specific theories utilized have been the Technology Acceptance Model by Davis et al. (1989) and the Theory of Reasoned Action by Fishbein and Ajzen (1975), as well as electronic performance monitoring, fairness, and privacy literature (Ambrose & Alder, 2000; Eddy et al., 1999). The authors proposed that system characteristics (e.g., frequency of monitoring) and the system's justifications could enhance employees' perceptions of privacy invasion and fairness. These beliefs would influence the perception of a system's usefulness and generate positive attitudes and a greater usage intention.

Characteristics such as (1) the frequency of image updating, that is, if the images are captured and projected intermittently versus continuously; (2) image clarity, in the sense that images are blurred or clear; (3) employees' control over who can access their information; and (4) knowledge of who is monitoring the individual versus no knowledge, are considered relevant antecedents of privacy invasion and fairness. Likewise, the system's justifications or explanations for the awareness systems are also defined as antecedents (Bobocel et al., 1997; Zweig & Webster, 2002). In that way, concerns about the release and dissemination of personal information (i.e., privacy invasion) and beliefs about whether the system is well implemented or not (e.g., fairness) would be affected by the system's characteristics and the explanations about its implementation (Zweig & Webster, 2002). These beliefs would form a perception of the system's utility in terms of benefit for the individual (Davis et al., 1989), which in turn would generate attitudes towards the system and its usage intention.

Given the ubiquitous nature of the technology to be studied, this article will employ the model proposed by Zweig and Webster (2002), which is relevant to the context of LBS continuance. Specifically, this study explores the role of the system's characteristics on privacy invasion, perceived usefulness, attitude formation, and their impact on usage intention.

Research Model

Because this research focuses on bringing a broader picture of ubiquitous technology acceptance, location-based services are relevant. Therefore, the proposed model investigates the acceptance of an LBS mainly through the pre-existing model by Zweig and Webster (2002). To give the proposed model a greater

complexity, it also considers the works of Malhotra et al. (2004) and Dinev and Hart (2006) to explain the roles of privacy concerns, trust beliefs, and perceived risk. Moreover, the research by Choi et al. (2014) was employed to deepen the LBS characteristics. Likewise, Davis et al. (1989) and Bhattacherjee (2001) frameworks about information system (IS) continuance use will be essential to explain the role of perceived usefulness, disconfirmation, and satisfaction. Finally, attitude formation and its impact on behavioral intention will be explained through the proposals by Fishbein and Ajzen (1975).

Invasive Technologies and Continued Usage Behaviour

The Awareness System Acceptance Model proposed by Zweig and Webster (2002) would be a starting point for understanding why LBS users continue using this technology. It includes the psychological dimensions of the use of monitoring technologies, perceived control, its antecedents, and its consequences, which are relevant to this investigation.

First, privacy in this context is defined as the extent to which people can control the release and dissemination of personal information (Zweig & Webster, 2002). That is, privacy is related to the type of information users may give to continue using the technology and the extent to which this information is available or disseminated (Moran et al., 2013). In that sense, ubiquitous technologies such as LBS generate certain apprehension in users because of the potential invasion of their privacy they could represent: they not only have access to users' location data through a mobile device but also use identifiable information to offer specific services that, depending on users' view, could create conditions for stress and anxiety concerning the misused of the data gathered (Rodríguez-Priego et al., 2022; Xu & Teo, 2004). Therefore, privacy will be studied as privacy invasion and considered the degree to which a person feels LBS technology is invasive of their boundaries (Moran et al., 2013).

According to Zweig and Webster (2002), privacy invasion is related to monitoring system characteristics. For this research, the perceived frequency of monitoring and perceived control of information are considered relevant in ubiquitous technologies. The first one is related to the notion of "frequency of image updating" proposed by the authors, which has to do with the projection of continuous versus intermittent images of an employee to their colleagues for monitoring purposes (Zweig & Webster, 2002). It affects privacy to the extent that the continuous projection of images would provide more detailed information about individuals, representing a higher potential for privacy invasion. This research adapts this notion to the LBS context and defines the perceived frequency of monitoring as the continuous versus intermittent monitoring an LBS technology could perform. Thus, if the monitoring is permanent or continuous, individuals would feel their privacy is invaded compared to intermittent monitoring. Empirical evidence for this relationship in similar contexts is scarce (e.g., Greenberg & Kuzuoka, 1999; Zweig & Webster, 2003). Additionally, while the differentiation between snapshot and continuous LBS has been recognized (Jiang et al., 2021), there are no empirical studies on this specific topic. Thus, the following hypothesis is suggested to fill this theoretical gap:

H1: Perceived frequency of monitoring has a direct and positive effect on privacy invasion.

The second characteristic refers to the extent of control users have over collecting and disseminating personal information (Zweig & Webster, 2002). Perceived control of information relates to how well the users are informed about a system or how much experience they have with it (Moran & Nakata, 2010). Thus, this research defines perceived control of information as the degree to which users feel they have control over using and accessing the data collected by an LBS (Moran & Nakata, 2010).

Invasion of privacy is defined in terms of the control of information users have; hence, privacy is invaded when there is a potential risk of information dissemination and users feel they have no control over it (Xu et al., 2012). Therefore, both constructs have an inverse relationship: to the extent users perceive a lack of control over information, perceptions of privacy invasion will be higher.

Empirical evidence suggests a relationship between both constructs. For example, Zweig and Webster (2002) found a connection between control and privacy invasion in an organizational context. Likewise, Zweig and Webster (2003) confirm this relationship within an educational context. Thus, the following hypothesis is raised:

H2: Perceived control has a direct and negative effect on privacy invasion.

The Theory of Reasoned Action (TRA, Fishbein & Ajzen, 1975; Fishbein & Ajzen, 2009) states that attitudes toward specific behavior (e.g., attitudes toward using all LBSs) are an individual's disposition to respond favorably or unfavorably to a behavioral intention (Ajzen, 2005). Attitudes are evaluative, so beliefs or perceptions about an object generate a positive or negative evaluation. Privacy invasion is related to users' perception of how much a monitoring technology (e.g., an LBS) transgresses their privacy. Thus, individuals who perceive ubiquitous technologies as invasive will have more negative attitudes toward said technology (Zweig & Webster, 2002). Research in ubiquitous technologies has supported this relationship. For example, Zweig and Webster (2003) found empirical support for their model when it evaluated an awareness monitoring system in a cooperative educational context. Likewise, Moran et al. (2013) found this link with a ubiquitous monitoring device in an organizational context. Thus, the following hypothesis is proposed:

H3: Privacy invasion has a direct and negative relationship with attitude toward the continued use of a location-based service.

Following the same logic, the perceptions of how useful an LBS is would generate attitudes towards its continued usage. Perceived usefulness in this context is defined as the cognitive appraisal of how an LBS is effective and has benefits for its users so that it captures the instrumentality of LBS use (Davis et al., 1989). This notion derives from the Technology Acceptance Model (TAM), and its importance relies on being a salient belief that consistently influences user intention across temporal stages of technology use (pre and post-use) (Bhattacherjee, 2001; Davis et al., 1989). Since TAM considers attitudes to be influenced by beliefs about an object (e.g., perceived usefulness of an LBS), it is plausible to argue that to the extent an LBS is perceived as beneficial for their users, attitudes towards continuing to use it would be positive. Empirical evidence supports this relationship in the information system context (Davis et al., 1989; Karahanna et al., 1999). However, no evidence in the LBS context was found. Therefore, it is essential to include in this theoretical model the following hypothesis:

H4: Perceived usefulness is positively related to an individual's attitude toward continue using a location-based service.

The TAM not only suggests that perceived usefulness indirectly impacts behavioral intention through attitudes, but it also explains the direct impact of this construct on continued usage intention. Davis et al. (1989) consider that individuals form an intention toward a behavior (e.g., continued usage of an LBS) that they believe will provide them with benefits (e.g., contextualized services). Thus, when individuals perceive that the continued use of a location-based service (LBS) provides an extrinsic reward, rational decision-making processes will primarily shape their intention to use it, and they will prioritize the functional benefits of the behavior over their emotional responses. (Davis et al., 1989). In that way, affections are not

necessarily activated when individuals decide to continue using an LBS. As Davis et al. (1989, p. 986) stated, "Individuals' attitudes would not be expected to completely capture the impact of performance considerations on one's intention." Therefore, perceived usefulness is expected to directly and positively impact the continued intention to use LBS. Empirical research on LBS has supported the relationship between both constructs. For example, Junglas and Spitzmuller (2006) and Choi et al. (2014) found this association in graduate students and Zhou (2015) in LBS users. In function of the above, the following hypothesis is considered:

> *H5: Perceived usefulness positively relates to an individual's intention to use a location-based service.*

Drawing on TRA, attitudes are viewed as a significant determinant of a person's intention to perform a behavior (Zweig & Webster, 2002). Thus, a positive attitude toward using LBS will determine the intention to use it continually. Ubiquitous technologies research supports this relationship. For example, Shin (2010) and Moran et al. (2013) found support for this link in the context of ubiquitous devices. In that sense, the following is stated:

> *H6: Attitude toward using a location-based service has a positive relationship with an individual's intention to use a location-based service.*

Ubiquitous system characteristics

While the Zweig and Webster (2003) model provides a theoretical basis that can be applied to ubiquitous technologies, it falls short in describing them. Thus, the work of Choi et al. (2014) is relevant, as it includes design system characteristics present in ubiquitous and pervasive technologies (e.g., service ubiquity and location-based services).

Service ubiquity is defined as technology's capacity to give users access to necessary information and services anytime and anywhere, irrespective of time and space (Choi et al., 2014). It is a characteristic exclusive to mobile information technology (IT), so it can be applied to ubiquitous technologies. (Tojib & Tsarenko, 2012).

Moreover, according to the TAM, a system's design characteristics can directly impact a user's perceived usefulness (Davis et al., 1992). When perceived usefulness is conceived as an extrinsic motivation that emphasizes outcomes gained from using a particular IT system (Davis et al., 1992), the features of a system will increase the perception of positive outcomes and, consequently, the perceived usefulness of the system will be higher. In that way, service ubiquity due to LBS would enhance usefulness by enabling users to locate services anytime and anywhere (Choi et al., 2014). Empirical evidence to support this relationship is found in mobile services literature. For example, Kim et al. (2010) and Schierz et al. (2010) evidenced that the perceived usefulness of mobile payment services is influenced by their reachability and mobility, respectively. From LBS literature, Choi et al. (2014) and Zhou (2015) found that service ubiquity or ubiquitous connectivity is related to the system's usefulness. Thus, the following hypothesis is stated:

> *H7: A service's ubiquity positively affects perceived usefulness.*

Another system characteristic describing ubiquitous technology relates to contextualized and personalized information. Location-based refers to the system's characteristic of providing services and information based on users' profiles and where they are (Choi et al., 2014). When users employ information at a certain time and place, location-based services offer personalized responses (Li & Du, 2012). Thus, users perceive

the system as more useful when it promptly provides location and context-specific information and services (Choi et al., 2014). In that way, the system characteristic of a location-based service is expected to have a relationship with the perceived usefulness of LBS technology. Location-based services are widely studied as a technology but scarcely as a design characteristic. Therefore, empirical evidence which supports their association with perceived usefulness is limited. For example, Yang and Lin (2017) evaluated LBSs as personalization and capability to form a second-order construct called perceived benefit, which could be similar to location-based service and perceived usefulness in the context of SoLoMo services. Likewise, Choi et al. (2014) supported this relationship in the context of mobile commerce. Thus, the following hypothesis is considered:

H8: The location-based characteristic positively affects perceived usefulness.

Privacy and Behavioral Intention in LBS

In the last decades, the study of ubiquitous systems has focused on the role of perceptions of risk, privacy, and trust. Thus, it is important to incorporate these notions into the base model of Zweig and Webster (2002) to contextualize them in the study of ubiquitous technologies.

Following the research by Dinev and Hart (2006), privacy concerns are perceptions about opportunistic behavior related to disclosing personal information submitted over an LBS system. Sources of opportunistic behavior include selling or sharing individuals' information with external parties different from the user and the system (Dinev & Hart, 2006). In that way, privacy concerns reflect the extent to which individuals believe they might lose their privacy by using an LBS system if it sells or shares individuals' information with third parties (Dinev et al., 2008). Likewise, without the awareness of how users' location information is being used and who has access to it, they may perceive certain degrees of surveillance of their activities (Xu & Teo, 2004). Thus, privacy concerns become a major inhibiting factor in users' intention to continue using an LBS (Beinat, 2001).

In this line, it is expected that privacy concerns are related to perceptions of risk about using an LBS. Perceived risk is the expectation of potential losses from releasing personal information to an LBS (Malhotra et al., 2004; Xu et al., 2005). Therefore, it is plausible to argue that when privacy concerns are higher, perceptions of risk about using an LBS will also be higher. Empirical evidence in the LBS context supports this relationship (e.g., Xu & Teo, 2004; Xu et al., 2005). In function of the above, the following hypothesis is stated:

H9: Privacy concerns have a positive effect on perceived risk.

Furthermore, perceived risk literature is widely related to trust (Malhotra et al., 2004). Trust is a set of beliefs that reflect confidence that personal information submitted to an LBS will be handled competently, reliably, and safely (Dinev & Hart, 2006). When users believe that an LBS is dependable in protecting their personal information, perceived uncertainty and vulnerability (related to risk perceptions) could be reduced. Risk and trust literature has supported this relationship in the context of internet usage (e.g., Malhotra et al., 2004) and e-commerce transactions (e.g., Dinev & Hart, 2006). Likewise, empirical evidence in LBS has supported the negative relationship between trust and perceived risk (e.g., Junglas & Spitzmuller, 2006; Xu et al., 2005; Zhou, 2015). In that way, the following hypothesis is considered.

H10: Trust directly and negatively affects perceived risk.

As mentioned above, privacy concerns are related to losing control of the users' information gathered by LBSs. In that sense, a system characteristic such as data control could impact these concerns. When users perceive they can control the data they are giving to the LBS, privacy concerns about the dissemination of information will be diminished. According to the TAM, system characteristics (e.g., perceived control of data) would have a relationship with beliefs about IT usage (e.g., privacy concerns about LBS) (Davis et al., 1989). Therefore, the following hypothesis is considered:

H11: Perceived control of data negatively affects privacy concerns.

Likewise, the TRA considers beliefs about a technology to be antecedents of attitudes toward its usage. Since privacy concerns and perceived risk are conceived as negative beliefs related to the evaluation of continued use of a system, it is plausible to consider that they would act as a negative antecedent of attitude formation (Xu & Teo, 2004). Thus, to the extent that privacy concerns are higher, attitudes towards continued use of an LBS will be negative. Likewise, with greater perceptions of risk related to using an LBS, attitudes toward its continued use will be negative.

Literature about ubiquitous technologies that support these relationships is scarce. For example, from privacy concerns literature, Dinev et al. (2008) found support for the privacy concerns – intention relationship in an online transaction context. However, no empirical evidence has been found in the context of ubiquitous technologies. On the other hand, Shin (2010) found support for the perceived risk and attitude relationship in the context of smart cities. Considering the above, the following hypotheses are considered:

H12: Privacy concerns negatively affect the attitude toward using a location-based service.

H13: Perceived risk is negatively related to the attitude toward using a location-based service.

Following the same logic, it is plausible that the extent to which perceived risk influences attitudes toward continued use of an LBS would directly impact its behavioral intention (Malhotra et al., 2004). If users believe an LBS would release their personal information, they will not continue using it. Empirical evidence in ubiquitous technologies supports this relationship (e.g., Gao et al., 2015; Li et al., 2016; Miltgen et al., 2013). Specifically, the LBS context has articles about perceived risk and behavioral intention (e.g., Junglas & Spitzmuller, 2006; Xu et al., 2005; Zhou, 2015). Therefore, the following hypothesis is considered:

H14: Perceived risk has a negative relationship with an individual's intention to continue using a location-based service.

In the same way, trust, by influencing the formation of attitudes, could also directly impact the intention to continue using an LBS (Malhotra et al., 2004). To the extent users believe that an LBS would handle their personal information in a competent, reliable, and safe way, they would continue using the system. Empirical evidence in LBS supports this relationship (e.g., Junglas & Spitzmuller, 2006; Xu et al., 2005; Zhou, 2016). Thus, the following hypothesis is stated:

H15: Trust has a positive relationship with an individual's intention to use a location-based service.

Continued use in the LBS context

Zweig and Webster (2002) designed their model to explain the intention to adopt an awareness system. However, since LBS technologies have already been in the market for a considerable time, it is essential to

update this model to explain the continuity of its use. In this sense, the model Bhattacherjee (2001) proposed is an adequate contribution.

Disconfirmation is the extent to which pre-use expectations are incongruent with the performance of a system; therefore, it is a cognitive evaluation of technology in the post-adoption stage (Bhattacherjee, 2001; Kim, 2011). This is taken from the theory of cognitive dissonance, which argues that an individual experiences dissonance when their previous expectations are higher than their perception of performance after using technology, so they are disconfirmed (Festinger, 1962).

In that line, disconfirming expectations would be related to the individual's satisfaction. In the present context, when the performance of a technology (e.g., an LBS) is inferior to the user's expectations, these are disconfirmed; therefore, the individual is less satisfied with their usage (Bhattacherjee, 2001).

This relationship has been demonstrated empirically, especially in the information system context (e.g., Kim, 2011). However, empirical evidence regarding LBSs is scarce, possibly because the IS usage continuance model has not been widely used in this literature. For that reason, it is vital to integrate the usage continuance perspective in ubiquitous system models. Thus, disconfirming expectations generated before acquiring information from an LBS (and therefore before its use) results in less satisfied users. Thus, the following hypothesis is considered:

H16: Disconfirmation positively affects satisfaction.

Likewise, the IS usage continuance model suggests that the disconfirmation of expectations related to the perceived performance of an IS is also related to its perceived usefulness (Bhattacherjee, 2001; Limayem et al., 2007). In that way, to the extent LBS users perceive incongruence between their expectations and their perceived performance, the perceptions of usefulness will be lower.

IS literature widely supports this relationship (Limayem et al., 2007). However, this perspective has been studied less in the LBS context for the above reasons. For this research, it is expected that disconfirmation of expectations would disfavor the perception of how useful the information and service provided for the LBS are. In this sense, the following is proposed:

H17: Disconfirmation positively affects perceived usefulness.

IS literature defines satisfaction as the affections that arise after using a technology (e.g., LBS), which results from a cognitive evaluation related to the confirmation of expectations about its performance (Bhattacherjee, 2001; Jin et al., 2010). Thus, the satisfaction of prior technology use is considered an essential antecedent of continued usage (Bhattacherjee, 2001). The empirical evidence supporting this relationship is sufficient (Bhattacherjee, 2001; Chen, 2007; Cheung & Lee, 2007; Jin et al., 2010). However, empirical evidence supporting this relationship is still scarce in the context of LBS.

Therefore, for this investigation, satisfaction is defined as the affections of the prior use of an LBS in terms of the contextualized and personalized information and services obtained through it. Moreover, it is derived from the evaluation of expectations of its users in terms of their performance. Thus, if individuals are satisfied with the information and services obtained by the LBS technology, they are more likely to continue using it. Hence, the following hypothesis is considered:

H18: Satisfaction has a positive relationship with an individual's intention to use a location-based service.

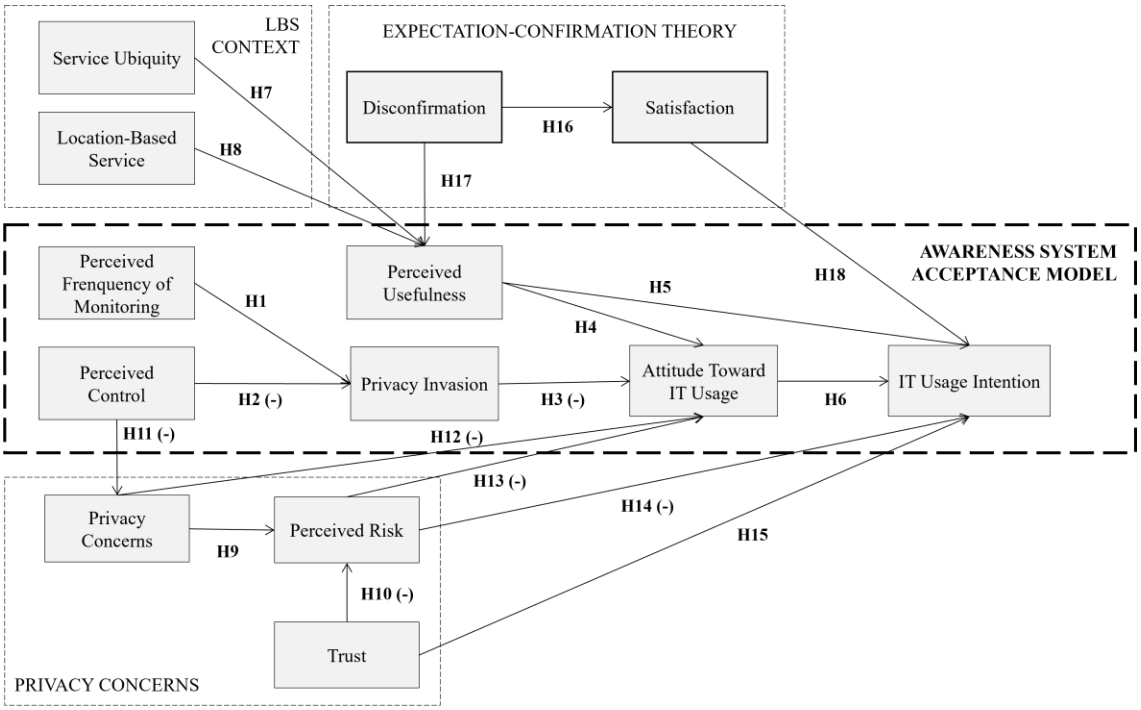

Figure 1: Research Model

Methodology

Since this study is ongoing research, this section describes the prospective data collection and analysis procedures.

Measurement instrument

The constructs related to the Theory of Awareness System Acceptance as the perceived frequency of monitoring, control and privacy invasion, perceived usefulness, and attitude will be measured with items based on the work of Zweig and Webster (2002), Davis et al. (1989), and Moran (2011). On the other hand, the system's characteristics, such as service ubiquity and location-based services, will be evaluated using scales proposed by Choi (2016), Choi et al. (2014), and Zhou (2015). Likewise, constructs related to privacy concerns, perceived risk, and trust will be measured with items used by Junglas et al. (2008), Xu and Teo (2004), and Xu et al. (2005). Finally, disconfirmation, satisfaction, attitudes toward continued use, and usage continuance intention of an LBS will be evaluated with items based on the work of Bhattacherjee (2001) and Fishbein and Ajzen (1975).

Data collection (future step)

The data will be collected via a survey, and structural equation models with SPSS AMOS 19 will be used for data analysis. The sample will be chosen from users of cloud storage technology. The medium employed will be Amazon Mechanical Turk, which is a web-based platform where employers (called requesters) post outsourced tasks for an anonymous network of laborers (called workers) who receive compensation for their contribution (Steelman et al., 2014). This website has proven effective in data collection (Steelman et

al., 2014). A pilot test will first be conducted to check the reliability and validity of the measurement items. The guidelines Chin (1998) proposed will be used to determine the minimum sample size. This rule of thumb establishes that the size should be at least 10 times the most significant number of formative indicators or the largest number of independent variables impacting a dependent variable, whichever is greater. 200 valid responses are expected in the data collection process, which is more than adequate for estimation procedures.

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