Computers in Human Behavior 35 (2014) 33–38

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

College students' disclosure of location-related information on Facebook

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ARTICLE INFO

Article history:
Available online 16 March 2014

Keywords:
Social networking sites
Facebook
Location-based services
Theory of reasoned action
Theory of planned behavior
Technology acceptance model

ABSTRACT

This study drew on existing research and three behavioral intention models to develop the beginning of a new model to explain why college students share their locations on Facebook. Findings showed that students were more likely to disclose their location on Facebook if their friends did so, a concept called subjective norm. Results also showed that subjective norm had an indirect effect on whether people disclosed their location, mediated through people's attitude toward disclosure, while controlling for usefulness of disclosing. Collectively, this model explained 61% of the variance in why college students share locations on Facebook. Findings are discussed in relation to behavioral-intention models, and practical implications for social media companies are offered.

1. Introduction

With the increasing prevalence of mobile devices and wireless Internet access in recent years, location-based services (LBS) have provided gigantic opportunities for the advertising and marketing industries. For example, by providing advertisements and coupons to nearby potential customers, restaurants may be able to gain more revenue than they can with traditional promotions. Gigaom, a website providing in-depth analysis of technologies and marketing, estimated that LBS would bring in $10 billion by 2016 due to their extraordinary potential (Kim, 2011). Since LBS mainly rely on users' voluntary disclosure of location-related information, there is a need for studies investigating the factors that influence whether users will disclose their locations. With 1.23 billion monthly active users, according to *Facebook Reports Fourth Quarter and Full Year 2013 Results*,[1] Facebook is one of the social media giants and poses a highly profitable LBS market for the future. Studying Facebook users' disclosure of location-related information may have important implications for social media companies, advertisers, and marketers.

Prior research has examined a variety of LBS, including Foursquare, Socialight, and Yelp (e.g. Hu & Ester, 2013; Humphreys & Liao, 2011; Noulas, Mascolo, Scellato, & Pontil, 2011). Much of that research has focused on privacy issues (e.g. Sadeh et al., 2009) as well as how accurately people disclose their locations and what these disclosures reveal about their social ties (e.g. Hecht, Hong, Suh, & Chi, 2011; McGee, Caverlee, & Cheng, 2013). Other studies have examined why people use LBS. Findings suggest that people are more likely to use LBS if their friends do (Humphreys & Liao, 2011; Lindqvist, Cranshaw, Wiese, Hong, & Zimmerman, 2011). Research that explores why people adopt new technologies suggests that attitude toward the technology and how useful people find the application are also important factors (Armitage & Conner, 2001; Chi, Yeh, & Yang, 2011; Lee, Kozar, & Larsen, 2003; Lu, Zhou, & Wan, 2009; Peslak & Ceccucci, 2011; Premkumar & Bhattacherjee, 2008; Tsai, Kelley, Cranor, & Sadeh, 2009).

However, what has not been fully explored is how this process occurs. This current study aimed to fill this gap by proposing and testing a mediation model that explained why young people disclose location-based information on Facebook. This new model is necessary because earlier models have not specifically addressed LBS in this way. To do this, we surveyed 141 college students, using questions drawn from prior LBS research and three theoretical models. The three models have moderate to strong power to predict why people adopt a behavior, and they have been applied to technology (e.g. Armitage & Conner, 2001; Chi et al., 2011; Lee et al., 2003; Lu et al., 2009; Peslak & Ceccucci, 2011; Premkumar & Bhattacherjee, 2008). These models are the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), theory of planned behavior (Hoyer & MacInnis, 2011), and the technology acceptance model (Davis, 1989). For this study, we focused specifically on Facebook because it is the number one website in the world, according to Alexa.com,[2] and its users frequently disclose their location (King, 2012).

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[1] According to data from *Facebook Reports Fourth Quarter and Full Year 2013 Results* http://investor.fb.com/releasedetail.cfm?ReleaseID=821954 accessed on February 20, 2014.

[2] According to figures at www.alexa.com accessed on June 30, 2013.

http://dx.doi.org/10.1016/j.chb.2014.02.028
0747-5632/

First, we offer a brief history of LBS. Then we review the literature on a variety of LBS and show how this research relates to this current study. Then we explain and propose our theoretical model, drawing on existing literature and the three theoretical models. Finally, we explain how we tested the model and how our results fit existing research and expand our understanding of why people disclose information on LBS.

2. Literature review

2.1. Location-based services

As on over-arching category, LBS are mobile or online platforms that use global positioning systems (GPS) to allow users to share their location in real time with others (Tsai et al., 2009). These services grew in number, starting in 2006, as more people switched to mobile phones, and more cellular phone towers made it easier to pinpoint users' locations, according to Tsai et al. (2009), who studied 89 such services. Many of these services work by allowing people to "check in" when they arrive at a location to alert their friends (Cramer, Rost, & Holmquist, 2011; Noulas et al., 2011). Platforms include CitySense, GeoMe, and Google Latitude, and most offer an option to "friend" other users (Tsai et al., 2009). Facebook Places launched in August 2010 and allowed users to "check in" to certain restaurants, coffee shops, and other stores to receive coupons or special offers (Sharon, 2010). A year later, Facebook discontinued "Places" (Gizmodo, 2011), facing competition from Foursquare, which offered users a similar experience. However, Facebook did not completely give up its location-related services; instead, Facebook evolved, integrating the function of location disclosure and including some of the services the "Places" application had offered (Beese, 2011).

Since it discontinued "Places," Facebook has allowed its users to not only "check in" at various places, but also to tag their specific locations on individual status updates or photo/video posts. Most importantly, location disclosure on Facebook is no longer limited to mobile device users. By customizing the function of location disclosure on its site, Facebook has differentiated itself from Foursquare, successfully encouraging its users to publish their geographical locations on Facebook. In 2012, it was estimated that 200 million Facebook users employed location tagging on a monthly basis (King, 2012). Facebook has 48 times more users compared to Foursquare, which suggests that Facebook may dominate the LBS industry in the near future.

2.2. Prior LBS research

Researchers have examined LBS activities on Foursquare, Twitter, Socialight and other services. Overall, studies suggest LBS users are leery of sharing their location because of privacy concerns (e.g. Sadeh et al., 2009; Tsai et al., 2009), but they may look beyond this worry if their friends are on the platform (Lindqvist et al., 2011). For example, Cramer et al. (2011) surveyed and interviewed Foursquare users and found that people had utilitarian reasons for using the program, including meeting to carpool, as well as more social reasons, such as sharing time with friends. Similarly, Lindqvist et al. (2011) interviewed and surveyed Foursquare users and found that people joined the service because their friends had done so, and connecting with friends on the LBS remained a stronger reason to use it. Users of Socialight also reported that using this application helped reinforce their social connections (Humphreys & Liao, 2011). Another study examined LBS in China and found that people use LBS if friends recommended it (Zhou, 2012).

Taken together, these studies suggest that part of the reason people use LBS is because of a subjective norm set by their friends. In other words, they disclose on LBS because their friends do, and they want to fit into the norm of their peer group. As a result, subject norm was one of the main factors considered in this study. Subjective norm is the social pressure from other people important to the user, such as relatives and friends, to do something (Hoyer & MacInnis, 2011).

Other studies of LBS suggested that people's attitude toward disclosing their location and perception of the usefulness of LBS (Tsai et al., 2009) also play a role in whether they share their locations. As a result, these concepts were main factors considered in this current study. Davis (1989) defined perceived usefulness as the extent to which a person believes a technology enhances job performance, although we tailored this definition to mean performance in general. Attitude toward a technology is defined as viewing that service or its features positively (Hoyer & MacInnis, 2011). In many of the studies of LBS, attitude toward the technology is implicit in whether people accept it. For example, Tsai et al. (2009) asked people to perceive the benefits and risks of LBS to understand their attitudes toward these applications. Similarly, Lindqvist et al. (2011) found that people checked into a location, thereby disclosing their location, only if the benefits of earning badges, making connections, and finding new places outweighed worries about privacy. Therefore, it seems clear that attitude toward revealing one's location and perceived usefulness of disclosure may play a role in whether people disclose their locations on Facebook.

2.3. Theoretical framework

Based on the above literature regarding LBS, we drew on three theoretical models that help explain why people enact certain behaviors and that have been frequently applied to computer-mediated communication and technologies (e.g. Chi et al., 2011; Peslak & Ceccucci, 2011). The theory of reasoned action (TRA; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) assumes people evaluate their behavior before they act, so actions are rational. The TRA model assumes users' attitudes toward a behavior and subjective norms predict whether people will adopt the behavior (Hoyer & MacInnis, 2011). The theory of planned behavior (TPB; Armitage & Conner, 2001) grew out of TRA and also proposed that attitudes toward a behavior and subjective norms predict users' behavioral intention (Hoyer & MacInnis, 2011). In addition, the technology acceptance model (TAM; Davis, 1989) is an extension of TRA that claims that perceived usefulness of a technology is one of several factors in whether people adopt new applications (Stewart, 1986; Tornatzky & Klein, 1982).

Based on the social media literature regarding LBS and these theoretical models, we proposed that people who feel greater subjective norm to disclose their location on Facebook through social pressure would be more likely to do so. Similarly, people who have a more positive attitude toward sharing their location will be more likely to do so, and people who perceive disclosing their location as useful, will be more likely to share it. Therefore, we hypothesized:

H1. (a) Subjective norm, (b) positive attitude toward, (c) and perceived usefulness of disclosing one's location on Facebook will show a direct positive relationship with intending to share one's location.

After establishing the role of the three focal variables in this research, the next step was to put forth the beginning of a proposed theoretical model that explained intention to disclose one's location on Facebook. Prior research on a variety of LBS (e.g. Cramer et al., 2011; Lindqvist et al., 2011; Tsai et al., 2009; Zhou, 2012) suggested that subjective norm, positive attitude toward disclosing one's location, and perceived usefulness of the technology all likely play a role in understanding why people share their locations.