With Good We Become Good: Understanding e-learning adoption by theory of planned behavior and group influences

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A B S T R A C T

Intention-based research proposes that intention can effectively predict technology adoption behaviors and emphasizes examining antecedents to increase technology adoption intention. Intention-based research demonstrates how individual internal perceptions can derive external behaviors. However, individual behavioral intention can be changed due to external social influences. Although current research investigates the impact of social influence on behavioral intention, this investigation views it as usually manipulated as "subjective norm", which represents the social influence from a particular individual (or individuals) within a group. This kind of manipulation may be regrettable because we may ignore the important influences brought by the group as a whole. Group influences may change individual behavioral intention by the processes of compliance, identification, and internalization. However, current intention-based research devotes less of effort to investigate group influences with other intentional antecedents. To bridge this gap, this study extends intention-based research by considering the impact of group influences. Specifically, we examine e-learning technology adoption by extending theory of planned behavior with social identity and social bonds. Survey data collected from 201 e-learning participants is used to verify the developed hypotheses. Our findings suggested that user attitude, perceived behavioral control, subjective norms, and social bonds presented significant positive correlations to e-learning intention. In addition, social identity and social bonds could moderate the effect of subjective norms on intention. The findings also indicated that intention enhanced the time for using e-learning technology rather than frequency. Research implications and limitations are also discussed.

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1. Introduction

> *With Good We Become Good*
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> ~ *Hsun Tzu, a Chinese philosopher, 313–238 B C.*

Many universities introduce an e-learning technology for having a real-time, any-time-any-where, and learner-centered learning (Galloway, 2005; Kathawala & Wilgen, 2004). For better e-learning adoption, previous studies concerned with user

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intention as a predictor of technology adoption behavior (Armenteros, Liaw, Fernández, Díaz, & Sánchez, 2013; Liaw, 2008; Masrom, 2007; Merhi, 2015; Park, 2009; Yi & Hwang, 2003). Such intention-based research proposes that better technology adoption by users with higher intention and discussed the antecedents affecting user intention (Armenteros et al. 2013; Cheung & Vogel, 2013; Liaw, 2008; Masrom, 2007; Merhi, 2015; Park, 2009; Yi & Hwang, 2003). These studies have proposed that user perceived ease of use and usefulness of the technology affect their attitudes toward technology (Cheon, Lee, Crooks, & Song, 2012; Cheung & Vogel, 2013; Lee, Cheung, & Chen, 2005; Liu, Liao, & Pratt, 2009; Ndubisi, 2004; Ong, Lai, & Wang, 2004; Yi & Hwang, 2003), and would further influence the technology adoption intention (Cheung & Vogel, 2013; Lee, 2006; Lee et al., 2005; Lee, Yoon, & Lee, 2009; Liu et al., 2009; Yi & Hwang, 2003). Therefore, users who considered a technology easy-of-use and being useful present more positive and higher intention to use that technology.

Based on a micro assessment, previous intention-based research explains technology adoption behavior from individual perceptions. It provides important implications for promoting technology adoption by carefully controlling individual perceptions as the antecedents of technology adoption intention. However, these studies ignore individual intention can also be influenced from groups that an individual belongs to (Kelman, 1958, 1961; Malhotra & Galletta, 1999; Qin, Kim, Hsu, & Tan, 2011). Although previous studies agree with the importance of social influences, most manipulate it with "subjective norms" that considers the impact of particular others within a group (Cheung & Vogel, 2013; Lin, Zimmer, & Lee, 2013; Schepers & Wetzels, 2007; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). Such manipulation is regrettable because it ignores the effect brought on by the entire group.

Group research indicates that an individual changes their behavioral intention from group forces though the processes of compliance, identification, and internalization (Kelman, 1958; Malhotra & Galletta, 1999). However, investigations on the impact of group forces on technology adoption intention are limited. To bridge the gap, this study includes social identity and social bonds to explore how group forces influence individual behavioral intention. Social identity refers to the degree to which an individual identifies himself/herself as belonging to a group (Tajfel & Turner, 1986). When social identity is higher, an individual will better follow the group norms and perform behaviors consistent with the image of the group (Cheung, Chiu, & Lee, 2011; Riley & Burke, 1995). Social bonds refer to the social sanctions that keep an individual behaving under social norms (Chriss, 2007; Hirschi, 1969). An individual with a higher sense of social bonds perceives higher social sanctions against deviations.

This study explored the effects of group on individual intention of e-learning technology adoption. With a survey, we empirically investigated the effects of attitude, subjective norms, perceived behavior control, social identity, and social bonds on e-learning adoption intention. The rest of this paper is organized as follows: first, we review the literature to serve as the theoretical basis of developing research framework. Next, we demonstrate our research framework and deduce our hypotheses. Then, we present and discuss our research findings. Finally, we conclude the research contributions and limitations.

2. Literature review

2.1. E-learning intention

E-learning is a technology-mediated learning approach that allows learners interacting with materials, teachers, and peers through a technology platform (Alavi & Leidner, 2001). By promoting learner-centered learning, e-learning will allow users to set the learning schedule and acquire learning materials ubiquitously (Rosenberg, 2001; Zhang, Zhao, Zhou, & Nunamaker, 2004). Many advantages of e-learning are suggested such as real-time learning, cross boundary interaction, convenience, cost effectiveness, and open learning (Kathawala & Wilgen, 2004; Rosenberg, 2001; Zhang et al., 2004). In addition, the multimedia learning materials that enhance the richness of presentation are easily reused and revised (Kathawala & Wilgen, 2004; Rosenberg, 2001; Zhang et al., 2004).

Research stresses the importance of behavioral intention to explain e-learning technology adoption (Cheung & Vogel, 2013; Masrom, 2007; Merhi, 2015; Park, 2009). Behavioral intention refers to individual willingness to complete a particular behavior (Ajzen, 1991; Fishbein & Ajzen, 1975). Behavioral intention is suggested as effective for predicting behavior (Hsiao, 2012; Lee, Cerreto, & Lee, 2010; Park, 2009; Tarhini, Hone, & Liu, 2013; Tosuntaş, Karadağ, & Orhan, 2015).

2.2. Antecedents of technology adoption intention

Many previous studies have investigated the antecedents of technology adoption intention and have proposed attitude as an important predictor (Baker, Al-Gahtani, & Hubona, 2007; Liu et al., 2009; Ndubisi, 2004; Park, 2009; Tosuntaş et al., 2015; Yi & Hwang, 2003). Based on a survey of 1088 Arab workers, for example, Baker et al. (2007) found a significant correlation between attitude toward technology and intention. In e-learning, previous studies presented similar findings. For example, Cheung and Vogel (2013) proposed that the higher intentions were found when individuals had a more positive attitude toward e-learning technology. Similar conclusions were found in Yi and Hwang (2003), Ndubisi (2004), Park (2009), Liu et al. (2009), and Tosuntaş et al. (2015).

Investigations on the antecedents of intention can be classified in two streams. The first stream of research developed research models based on the theory of rational action (TRA) (Fishbein & Ajzen, 1975) or the theory of planned behavior (TPB) (Ajzen, 1985) (Fig. 1). In TRA, an individual performs a specific behavior based on behavioral intention, which can be