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Persuasive messages on information system acceptance: A theoretical extension of elaboration likelihood model and social influence theory

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ABSTRACT

Firms invest millions of dollars in the introduction of new information systems for long-term benefit. If employees are not willing to accept a new information system, such investments may be wasted. Employee acceptance of a new information system is in part determined by external influences. However, previous research has neglected the paths of persuasive strategies and external social influences on information system acceptance. Linkages between persuasive strategies and external social influences are also scarce. By integrating social influence theory and an elaboration likelihood model, this study explores the influence of persuasive messages (source credibility and argument quality) on social influence, affective response and cognitive response. This study also investigates the interrelationships among affective response, cognitive response and behavior intention. Furthermore, the moderating roles of social influences on the impact of affective response and cognitive response on behavior intention are identified.

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1. Introduction

Firms depend on information technology to execute a variety of operational, tactical, and strategic processes. When introducing a new technological information system, firms always invest large sums, such as time, money and efforts, to generate long-term benefits or help operational activities become more effective and efficient (Jan & Contreras, 2011). If employees do not accept the new information systems, such investments may be wasted, since productivity or decision quality may not be improved through new information system implementation.

Several theoretical models have been proposed to examine an individual's behavior intention toward using information or technology systems, including the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989), task-technology fit (Goodhue & Thompson, 1995), and innovation diffusion theory (Rogers, 1995). These models postulate that an individual's cognition results in increased information system use. However, perception itself is insufficient to explain an individual's motivations (Ahn, Ryu, & Han, 2007; Chung, Park, Wang, Fulk, & McLaughlin, 2010; Davis & Wong, 2007). An individual's affective components toward information system acceptance cannot be neglected (Koufaris, 2002). Although it is critical in workplace settings, affective focus has been mainly been explored in evaluating product performance in consumer markets (Batra & Stephens, 1994; Selnes & Gønhaug, 2000). Therefore, both affective and cognitive components should be considered when investigating individual acceptance of new information system implementation.

According to TAM, external variables have influences on an individual belief. An individual belief then impacts attitudes toward using an information system, which leads to behavior intention. Accordingly, an individual's behavior is probably determined by the external variables or influences around him/her (Henningsen, Henningsen, Cruz, & Morrill, 2003; McFarland & Hamilton, 2006). Several studies have developed a more complex model to provide better explanations of external influence on individual perception. For example, Venkatesh and Davis (2000) extended the original TAM model to TAM2 by incorporating subjective norm and investigating its influence on perceived usefulness and usage intentions. Subjective norm, proposed by the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1980), describes the normative aspect of social influence. However, social influences do not consist solely of social interaction (normative social influences), but deliver information (informational social influences) as well (Wood, 2000). Using only normative social influences results in a weak model. A more robust view of both informational and normative social influences is thus required (Green, 1998).

Managers use different persuasive strategies to communicate with employees about new information system, and persuade them to adopt it (Sánchez & Hueros, 2010). Firms can use persuasive strategy, such social cues, to reinforce, change or shape employees' social norms or behaviors (Fogg, 2003; Steiny, 2009). Persuasive messages applied in designing persuasive information system at content and form can shape social belief and practice of the people (Parmar, Keyson, & de Bont, 2009). One of the popular

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persuasive message models is the elaboration likelihood model (ELM) (Petty & Cacioppo, 1986). The ELM explains why a given influence process may lead to different outcomes and impacts on human perceptions and behavior. ELM is an important theory in understanding information system acceptance, since it elaborates information procession routes which address gaps in technology acceptance research (Bhattacherjee & Sanford, 2006).

The majority of applied research on ELM has taken place in the fields of advertising and consumer behavior. Only a few researchers have addressed the idea of persuasive strategy to promote information system implementation within firms. Previous research on the patterns and paths of persuasive strategies of information system acceptance has been neglected. Little is known about what type of message or information is more effective in influencing individual emotions and perceptions in the process of information system acceptance. Further, previous research on the linkage between ELM and external social influences is also scarce (Henningsen et al., 2003). Thus, the routes of influence for persuasive messages, along with their influences on social influences toward information system implementation, deserve exploration.

By integrating social influence theory and ELM, this study addresses the above gaps to present a simple yet useful theoretical model for exploration of employee information system acceptance behavior. This study explores the influence of persuasive messages (source credibility and argument quality) on social influence, affective response and cognitive response. This study also investigates the interrelationship among affective response, cognitive response and behavior intention. Furthermore, the moderating roles of social influence on the influence of affective response and cognitive response on behavior intention are identified. The results provide valuable information for both academicians and practitioners investigating and developing persuasive strategies for information system implementation.

2. Theoretical background and the research model

2.1. Elaboration likelihood theory (ELM)

ELM, proposed by Petty and Cacioppo (1986), has been widely applied in the field of socio-psychology and marketing to describe how individuals process information (Jones, Shultx, & Chapman, 2006; Petty & Cacioppo, 1986). Findings of advertising effects using ELM provide insight into how persuasive message contents affect an individual's perception toward information system acceptance. The ELM explains an individual's attitude change in terms of central route and peripheral route, based on the amounts of thoughtful information processing or the individual's subjective elaboration demand. The central route refers to an individual's critically cognitive thinking about task-related arguments and relative merits to forming judgment about the target behavior, while the peripheral route refers to the individual using simple cues or inferences heuristically in evaluating the target behavior, without cognitive thinking (Bhattacherjee & Sanford, 2006; Petty & Cacioppo, 1986). Since information system acceptance represents a firm's policy to achieve a specific target, ELM can be a model which guides managers to understand employee information influencing and processing route.

Stephenson, Benoit, and Tschida (2001) used argument quality and source credibility to investigate the roles of cognitive responses in several casual ELM models. Mak, Schmitt, and Lyytinen (1997) proposed that perceived credibility of message source has been regarded as one of the major peripheral cues, while strength of the argument has been found to be a critical factor for central route messages. Rosen (2000) investigated the effects of source expertise and argument quality on an individual's information processing. An individual with central route information processing is always influenced by quality arguments regarding the potential benefits of information system acceptance, and/or costs of and returns from system acceptance, while an individual with peripheral route information processing is always persuaded by the identification with the source (Bhattacherjee & Sanford, 2006).

Since this study investigates individual information system acceptance, central routes and peripheral routes are operational zed using source credibility and argument quality, respectively, which appear to be two of the most frequently referenced constructs (Rucker & Petty, 2006). Source credibility is defined as a firm that provides expertise or people who are perceived to be believable, competent, and trustworthy by information recipients to deliver persuasive messages (Sussman & Siegel, 2003; Arora, Stoner, & Arora, 2003). Due to trustworthiness and credibility from the source, employees may follow suggestions from credible source without "issue-relevant" thinking. Jones, Sinclair, and Courneya (2003) argued that credible sources lead to greater message elaboration than non-credible sources. Giffin (1967) applied source credibility to the theory of interpersonal trust and found that if the source of the messages is perceived as credible, the messages have greater persuasion effects. Accordingly, credible source alters or strengthens employees' message processing and thus becomes persuasive. Argument quality refers to as a firm that provides messages embedded with strong, persuasive arguments (Sussman & Siegel, 2003). In addition, to simplify the research model, based on the suggestion of Angst and Agarwal (2009), this study operationalized the argument quality and source credibility constructs as two differential influencing routes to generate variation in persuasion, instead of incorporating the interaction of persuasive strategies and individual capabilities into the research model.

2.2. Social influence theory

Social influence refers to how an individual in a social network is influenced by the behavior of others to conform to community behavior patterns (Venkatesh & Brown, 2001). Deutsch and Gerard (1955) distinguish two types of social influence, informational and normative. Informational social influence is "influence to accept information obtained from another as evidence about reality," while normative social influence refers to "the influence to conform to the expectations of another person to group." Normative influence occurs in groups based on a desire to maintain group harmony or to elicit positive evaluations from others, and where discussion content presents the positions favored by other group members (Kaplan & Miller, 1987).

When individuals are under normative influence, they perceive higher levels of social pressure to perform or not to perform behavior, regardless of their beliefs and attitudes toward the behavior. Informational influence causes group members to reevaluate their positions, when facts, evidence, or other forms of information pertinent to the decision are discussed by group members based on a desire to make high quality decisions (Kaplan & Miller, 1987). Spreng and Page (2001) suggested that if an individual acquires more information, he/she possesses greater confidence to guide later behavior or attitude formation. Lee, Cheung, Sia, and Lim (2006) indicated that social group influence is a learning process. Before deciding whether to accept it, individuals observe successful experiences acquired by their social groups. Since this study investigates different types of social influence on acceptance behavior rather than different levels of social influence proposed by Deutsch and Gerard (1955), this study uses informational influence and normative influence to represent two types of social influence.

2.3. Affective response, cognitive response, and behavior intention

Recent research on technology acceptance includes both affective and cognitive response to construct a more realistic assessment

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