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Author

Nguyen, Mai, Malik, Ashish, Sharma, Piyush

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How to motivate employees to engage in online knowledge sharing?

Differences between posters and lurkers

Nguyen, M., Malik, A. and Sharma, P.

Purpose - This study combines the theory of planned behavior (TPB) and the motivational framework to extend the research on online knowledge sharing (OKS) in an organization by exploring the factors that drive the knowledge sharing intentions (KSI) of posters and lurkers.

Design/methodology/approach – A field survey with 501 employees in Vietnamese telecommunication companies is used to collect the data, and structural equation modeling (SEM) approach with AMOS 25.0 is used to test all the hypotheses.

Findings - Attitudes toward OKS and subjective norms (SN) influence online KSI for both posters and lurkers. Self-enjoyment has a stronger effect on the attitudes toward OKS for posters than lurkers. Self-efficacy, reciprocity and rewards only affect posters and not lurkers.

Research limitations/implications – This study uses self-efficacy and self-enjoyment to represent intrinsic motivation, and reciprocity and rewards for extrinsic motivation. Future research may use additional motivational factors to provide additional insights.

Practical implications – Managers should pay greater attention to subjective norms and attitudes towards knowledge sharing to motivate all the employees to share knowledge with each other in order to improve organizational performance.

Originality/Value – This is the first study to combine TPB with the motivational framework to explore the factors that drive online knowledge sharing in an organization.

Keywords: Extrinsic motivation, Intrinsic motivation, Lurkers, Online knowledge sharing, Posters

Introduction

Integrating and sharing knowledge by employees in an organization via face-to-face and online modes has been linked to positive organizational outcomes, such as enhanced performance, increased productivity, and better innovation capabilities, which are the key to providing organizations with a sustainable competitiveness advantage (Cummings, 2004; Li et al., 2019; Malik and Nilakant, 2016; Malik et al., 2020; Mesmer-Magnus and DeChurch, 2009; Yang, 2007). Hence, it is not surprising to see online knowledge sharing in organizations proliferate with the recent advancements in the information and communication technologies. As a result, many organizations encourage employees to use systems for online knowledge sharing because it facilitates information flow and a wider distribution of knowledge as well as creates a healthy learning climate based on collaboration (Li et al., 2019; Yang, 2017; Nguyen and Malik, 2020; Nguyen et al., 2019). Online knowledge sharing systems are useful, especially in multinational corporations or large companies where employees need to interact with each other, often without regular face-to-face meetings (Iglesias-Pradas et al., 2017). A significant amount of money has been invested in creating knowledge sharing systems and online platforms. In 2002, across Fortune 500 companies, USD\$ 2.7 billion was used to establish the systems that facilitate online knowledge sharing and online knowledge management. In 2007, USD\$ 4.8 billion was expected to invest in these systems, almost double the 2002 expenditure (Babcock, 2004). However, enhancing online knowledge sharing is a challenging task, as in any organization, knowledge is considered power; thus, employees tend to hide knowledge due to a fear of losing their competitive advantage (Akhavan et al., 2005; Gagné et al., 2019; Le et al., 2018).

According to previous research (e.g., Marett and Joshi, 2009; Walker *et al.*, 2013), lurkers, who never or rarely share knowledge, account for 50–90% of online participants, which may

explain low posting rate and low-value content. Van Mierlo (2014) found that 90% of online participants in four digital health social networks contributed 1.7 per cent of posts. The annual losses associated with knowledge hiding and the large proportion of lurkers were reported up to USD 31.5 million in Fortune 500 companies, due to the negative impacts on organizational performance and team effectiveness, such as slowing down creativity development or damaging the collaboration among employees (Babcock, 2004).

In order to enhance online knowledge sharing to help organizations maintain competitive advantages, several studies have examined the factors that determine knowledge sharing intentions (KSI) and behavior (KSB). Surprisingly, although lurkers comprise the majority of online participants, few studies have examined the determinants of their KSI and KSB, and paid more attention to the reasons for lurking (e.g., Sun *et al.*, 2014; Amichai-Hamburger *et al.*, 2016). A few studies also investigate how to motivate lurkers to share knowledge in online communities (e.g., Hung *et al.*, 2015; Lai and Chen, 2014), but there is a lack of research on the factors that drive online knowledge sharing in an organization (Charband & Navimipour, 2016; Nguyen, 2020). This is an important research gap because employees in an organization tend to know each other and have to work together to achieve organizational goals. Hence, in comparison to the driving force of lurkers in online communities, the attitudes and behaviors of those in organizations may be different and needs to be understood in order to encourage more sharing.

Prior studies focus more on posters and implicitly assume the factors that drive posters' KSI and KSB, somehow also have an impact on lurkers' KSB. Driving factors and motivation for posters and lurkers differ and, as such, a distinction is necessary between posters and lurkers in examining participants in online knowledge sharing (Lai and Chen, 2014). Thus, there is a strong need to understand the differences in the psychological

mechanism behind posters' and lurkers' KSB in order to promote their tendencies to share their valuable knowledge. We address this important research gap in this paper.

Theory of planned behaviour (TPB) is a well-known socio-psychological theory because it explains why an individual engages in a behavior (Chen, 2011; Chen *et al.*, 2009). According to the TPB, attitudes toward online knowledge sharing, subjective norms, and perceived behavior control are the most reliable predictors for employees' KSI and KSB in an organization (Ajzen, 1991). However, prior studies such as Lin (2007), Hsu and Lin (2008) or Lai and Chen (2014) reveal the limitations of TPB in explaining employees' KSI and KSB as it fails to account for motivation, an essential driving force for online knowledge sharing. Without motivation, online KSB hardly occurs. As knowledge sharing is voluntary and valuable, knowledge only can be shared when employees are motivated to engage in the online knowledge sharing activities (Ryan and Deci, 2000).

The motivations for sharing knowledge in the presence of other organisational factors has drawn considerable attention from researchers (Lee *et al.*, 2020; Nguyen and Malik, 2020) and practitioners. Knowledge sharing motivation can be divided into two categories, namely intrinsic and extrinsic motivation. In the literature on knowledge sharing, previous researchers have tended to investigate the impact of two types of motivation, intrinsic and extrinsic, separately (Pee & Lee, 2015; Shao et al, 2017; Yu et al, 2010) rather than jointly. In fact, as chronic trait-like dispositions, intrinsic and extrinsic motivation often coexist (Vansteenkiste et al, 2007). Accordingly, in an organization, employees often possess intrinsic and extrinsic motivation simultaneously.

The main objectives of this study were: (1) to explore the drivers of posters' and lurkers' online KSI; and (2) to integrate both intrinsic and extrinsic motivation into the TPB to deepen our understanding of the psychological mechanisms behind online KSI. The findings of this

study can contribute a theoretical background and empirical evidence that can predict and explain posters' and lurkers' online KSI. In terms of the practical perspective, the findings of this study can provide suggestions for business managers or policy-makers to wisely manage their valuable human resources and ensure a productive online knowledge-sharing environment.

Literature review

Knowledge sharing in organizations

Knowledge has been recognized as the most important resource in an organization (Nguyen and Malik, 2020). Therefore, knowledge management has become a critical activity which refers to a systematic process of creating, acquiring, disseminating, leveraging and using knowledge to retain competitive advantage and to achieve organisational objectives (Nguyen and Malik, 2020). Knowledge sharing has emerged as a core process of knowledge management because knowledge by itself does not have any value unless it is put to use and shared among employees (Akhavan *et al.*, 2005; Al-Alawi *et al.*, 2007). Through facilitating the knowledge sharing process and information technology infrastructure, organisations can create the conditions to encourage employees to participate, engage and verbalise their knowledge, as means to maximise their contribution to the pool of ideas (Amayah, 2013). An essential aspect of knowledge sharing is that it makes employee knowledge available to others in an organisation (Berends *et al.*, 2006; Bhatt, 2000). In other words, knowledge sharing facilitates learning among employees and helps them to address similar situations or problems as others (Nguyen *et al.*, 2019). Employees often face numerous difficulties and issues in their work and look for help to address these (Bock, 2005). However, those who have experienced similar issues and know how to overcome them may not know how to share their experiences effectively. Therefore, knowledge sharing connects people who need

knowledge with those who have it (Kankanhalli *et al.*, 2005). Through the exchange of knowledge with each other or across the departments of an organisation, employees may help each other to solve work issues, create ideas and improve job performance (Lin, 2007).

Knowledge sharing is critical to increase and sustain the competitive advantage of an organisation (Kwahk and Park, 2016). Previous studies have shown that knowledge sharing has a positive association with diminishing production costs, generating solutions and increasing productivity (Wasko and Faraj, 2005). This association often results in faster completion of new product development projects and improved firm innovation capabilities, leading to the maintenance of organisational competitive advantage (Cummings, 2004; Lin and Lee, 2004). Yang *et al.* (2017) confirm that knowledge sharing often increases organisational competitive advantage through enhanced social interaction in the workplace. Knowledge sharing can encourage the exchange of knowledge, experience and skills throughout the whole organization (Lin, 2007; Le & Lei, 2018, 2019). As a result, knowledge sharing enables every department to access the information they need and connects employees in the organisation with each other in problem-solving (Nguyen and Malik, 2020). Furthermore, knowledge sharing also helps to sustain organisational competitive advantage via preserving pre-existing knowledge (Matić *et al.*, 2017). Knowledge, which is shared within an organisation, is not lost when employees retire or move on (Yang and Huang, 2017).

Online knowledge sharing

The emergence of online platforms such as weblogs, Zoom, Microsoft Teams, or Skype has paved the way for online knowledge sharing as a new method of working or collaborating among employees in an organisation. Online knowledge sharing refers to the transfer of knowledge among employees via online platforms (Nguyen & Malik, 2020). Bharati *et al.*

(2015) emphasise that online platforms facilitate online knowledge sharing by extending employees' reach beyond face-to-face communication. Online platforms can function as a bridge for knowledge sharing because they make knowledge available to those who need it (Chen *et al.*, 2009; Chow and Chan, 2008; Erden *et al.*, 2012). Online platforms have interactive potential, which enables interlocutors to communicate asynchronously or synchronously in near real-time; thus, they enable employees to work across space and time by integrating different information sources and overcome difficulties by blending knowledge (Hsu *et al.*, 2007). For example, due to their broad readership, weblogs and discussion forums are very useful in conversationally contextualising knowledge where employees can express their viewpoints and reflect on the knowledge gained in an organization (Hsu and Lin, 2008). If an employee has a query or is experiencing some difficulty, a question can be posted in an online platform, and an answer received from someone who has experience of dealing with that issue (Hung *et al.*, 2015).

From an organisational perspective, changes in how people interact and communicate also encourage organisations to utilise online knowledge sharing to accommodate the needs of a new generation entering the workforce (Iglesias-Prada *et al.*, 2017). Online knowledge sharing takes place in numerous large companies such as at IBM, HP, and Accenture and SAP. Additionally, online knowledge sharing often enhances interpersonal socialisation in an organisation as it increases the interaction that facilitates the creation and transfer of knowledge (Iglesias-Pradas *et al.*, 2017). Thus, many organisations have recognised the importance of the online transmission of knowledge in improving the performance of employees, and they have invested in technological infrastructure that facilitates online knowledge sharing (Nguyen and Malik, 2020).

Posters vs. Lurkers

Participants in online knowledge sharing are often categorised into two types: lurkers and posters (Lai and Chen, 2014). The former refers to those who read postings without making any contribution, while the latter refers to those who share knowledge online (Marett and Joshi, 2009). Although posters often donate knowledge to build value, the vast majority of members in online knowledge sharing are lurkers, accounting for up to ninety per cent of the total number of participants (Marett and Joshi, 2009). This phenomenon has drawn the attention of researchers and practitioners in an attempt to identify who lurkers are, and the reasons for lurking, and also to suggest “de-lurking” strategies which refer to the ways to encourage lurkers to share knowledge (Amichai-Hamburger *et al.*, 2016). The term ‘lurker’ is not absolute as there is no single definition of lurkers. For example, some define a lurker as a member who has never posted (Sun *et al.*, 2014). However, the term lurker may also refer to members who post infrequently (Ridings *et al.*, 2006), have not posted recently (Nonnecke *et al.*, 2004), or, have maintained a minimal level of posting, such as fewer than four posts over twelve weeks (Nonnecke *et al.*, 2004).

In the online knowledge sharing literature, previous studies focused predominantly on posters because posters generate content and create value for online communities (e.g., Chen *et al.*, 2009; Bharati *et al.*, 2015). There is a growing number of studies examining reasons for lurking behaviour (such as Amichai-Hamburger *et al.*, 2016; Sun *et al.*, 2014) to suggest de-lurking strategies to motivate them to share knowledge online as lurkers often make up the vast majority of online participants. However, there have been few studies that simultaneously investigate lurkers and posters. As lurkers and posters often coexist, the separate exploration of the two types of online participants leads to difficulties in understanding whether the driving forces of lurkers and posters are different or not. Understanding the differentiation in the driving forces of knowledge sharing behaviour between lurkers and posters is very important to help practitioners to develop strategies to

motivate different types of participants to share knowledge online effectively.

Theory and hypotheses development

Motivational Framework (Intrinsic vs Extrinsic)

Drawing upon prior studies (Hsu and Lin, 2008; Huang *et al.*, 2008; Lai and Chen, 2014; Liao *et al.*, 2013; Lin, 2007), in this study, motivation is integrated into TPB to provide a comprehensive picture of online knowledge sharing in an organization. Motivation plays a vital role in the online knowledge sharing process. As knowledge is power, an employee needs to be motivated to engage in knowledge sharing (Matić *et al.*, 2017; Ryan and Deci, 2000). In other words, motivation is the force that drives the desires of employees to share knowledge (Hau *et al.*, 2016; Tang *et al.*, 2016). Therefore, motivation is the primary concern of any organization (Bock *et al.*, 2005; Kankanhalli *et al.*, 2005b; Wasko and Faraj, 2005).

Employees can be motivated either extrinsically or intrinsically. If employees are intrinsically motivated, they will engage in online knowledge sharing because they find it inherently exciting and/or enjoyable (Zhang *et al.*, 2017). On the other hand, extrinsically motivated employees are often driven by a goal (Zhang *et al.*, 2017). Prior research has shown that these two kinds of motivations often coexist and together affect KSB (Gong *et al.*, 2017). Intrinsic motivation often stems from feelings employees have about such activities. Thus, building on prior studies in the knowledge sharing context (Kwahk and Park, 2016; Lin, 2007; Suppiah and Sandhu, 2011), the two salient intrinsic motivators, self-efficacy and self-enjoyment, are the prime focus of this study. The meta-analysis study by Nguyen *et al.* (2019) also indicates that self-efficacy and self-enjoyment are the most representative variables of intrinsic motivation. Self-efficacy in this study refers to knowledge self-efficacy, which involves the employees' confidence in their ability to provide knowledge that is

valuable to others (Kankanhalli *et al.*, 2005; Spreitzer, 1995). Posters with a high level of knowledge self-efficacy have powerful self-motivation (Hsu *et al.*, 2007), and as a result, they will be active in sharing knowledge (Bock and Kim, 2002; Lin, 2007). Competence or self-efficacy motivates posters to share their knowledge with colleagues (Bock and Kim, 2002; Kankanhalli *et al.*, 2005; Wasko and Faraj, 2005). Prior studies (Bock and Kim, 2002; Constant *et al.*, 1994) have shown that posters who are confident in their ability to provide valuable knowledge are more likely to share knowledge. However, lurkers may have a low level of self-efficacy which prevents them from sharing knowledge (Amichai-Hamburger *et al.*, 2016). Lurkers, even have a high level of self-efficacy, may not be as interested in posting as posters because their informational needs could be satisfied by just reading (Nonnecke *et al.*, 2004).

Self-enjoyment is the degree of personal belief that if individuals share knowledge, they will experience a sense of enjoyment (Teo *et al.*, 1999). Employees who enjoy sharing their knowledge have an intrinsic motivation that is derived from moral obligation, and thus the moral obligation often exceeds the desire to maximize self-interest (Washo and Faraj, 2000). Employees with intrinsic motivation are likely to contribute to sharing knowledge because engaging in intellectual pursuits and overcoming difficulties is pleasurable and enjoyable to them (Bartol and Srivastava, 2002). Posters who experience enjoyment from helping others may be more inclined to share knowledge since they gain satisfaction and a feeling of being useful to others due to sharing knowledge (Lin, 2007). Posters seem to gain satisfaction and pleasure when they can help others through sharing knowledge; thus, enjoyment in sharing is a significant predictor of posters' information-sharing behaviors (Lai and Chen, 2014). However, compared to posters, lurkers tend to be motivated less by self-enjoyment because they prefer to read the knowledge shared, rather than sharing knowledge themselves (Preece *et al.*, 2004). If lurkers do not share knowledge, they tend not to interact with others;

therefore, they are less likely to find online knowledge sharing enjoyable (Nguyen, 2020).

Lurkers must first post to have a sense of enjoyment when sharing with others, interact with others and find that there is value in the knowledge they share (Lai and Chen, 2014).

Therefore, we hypothesize that:

H1a. Self-efficacy has a stronger positive influence on the attitude towards online knowledge sharing of posters than lurkers.

H1b. Self-enjoyment has a stronger positive influence on the attitude towards online knowledge sharing of posters than lurkers.

Extrinsic motivation stems from a cost-benefit analysis (Osterloh and Frey, 2000). If the perceived benefit is equal to or exceeds the costs, the knowledge sharing process may occur (Kelly and Thibaut, 1978). In the knowledge sharing literature, two salient extrinsic motivators are referred to as reciprocity and rewards (Lin, 2007; Zhao *et al.*, 2016). In the recent meta-analysis of Nguyen *et al.* (2019), these two factors have been recognized as the most representatives of extrinsic motivation. Thus, this study will focus on these two motivators. Reciprocity is defined as actions that are performed due to the expectations of the return (Chang and Chuang, 2011). Knowledge sharing is facilitated by the strong reciprocity (Chang and Chuang, 2011). Individuals who share their knowledge expect mutual reciprocity for their time and efforts (Lin, 2007). In other words, all posters and lurkers perceive knowledge sharing as fair. Since lurkers collect valuable knowledge from posters, they are indebted to transferring equivalent knowledge to posters (Schulz, 2001). This implies that posters always expect their knowledge sharing to prove worthwhile via the mutual give and take of knowledge. Such reciprocity has been proven to be the significant knowledge enabler of knowledge sharing. Reciprocal knowledge exchange relationships may encourage employees' KSI and make posters more willing to share their valuable knowledge (Lin, 2007;

Wasko and Faraj, 2005). When posters share online, they may spend significant time to write a post and respond to additional questions posed by the knowledge receivers that facilitate the building of beneficial reciprocal relationships with other members (Lai and Chen, 2014). Therefore, posters tend to expect a high level of reciprocity because of their time and effort in sharing knowledge to others (Lin, 2007). If their expectation of reciprocity is met, they are more motivated to share more knowledge (Wasko and Faraj, 2005). However, lurkers tend to make less effort than posters in contributing valuable knowledge to the group (Nonnecke et al., 2004). Lurkers often read the information shared by others rather contribute themselves; thus, they are more likely to expect reciprocity less than the posters (Preece et al., 2004).

Rewards in this study refer to tangible organizational rewards which involve tangible incentives such as bonus or higher salary when an employee performs well (VonKortzfleisch and Mergel, 2002). It is unrealistic to assume that employees automatically share knowledge without strong, rewarding incentives (Al-Alawi *et al.*, 2007; Syed-Ikhsan and Rowland, 2004). According to Carrillo (2004), companies should link the contributions of knowledge donors by comparing their contributions and the use of knowledge management systems. Changes in reward and performance appraisal systems can lead to changes in employees' KSB (Bartol & Srivastava, 2002). Organizational rewards have been proven to be effective in encouraging posters to share their knowledge for extrinsic benefits (Cabrera et al., 2006; Hung et al., 2011). As posters tend to be motivated by rewards than lurkers because they are more active in sharing their knowledge, they want to show that they are deserving of the rewards (Amichai-Hamburger et al., 2016). Being motivated by rewards, posters often actively provide ideas and insights to others to show their endeavour and their contribution to the organization (Lin, 2007). Compared to posters, the impact of organizational rewards on knowledge sharing behaviour for lurkers is expected to be weaker because lurkers often spend more time reading and searching for information rather posting (Amichai-Hamburger

et al., 2016). Therefore, we hypothesize that:

H2a. Reciprocity has a stronger positive influence on the attitudes toward online knowledge sharing for posters than lurkers.

H2b. Reward has a stronger positive influence on the attitudes toward online knowledge sharing for posters than lurkers.

Theory of planned behavior

TPB is a social-psychological theory that is most frequently used to predict an individual's intention to engage in a behavior (Chen, 2011; Chen *et al.*, 2009; Radaelli *et al.*, 2015). In the knowledge sharing literature, TPB has been commonly used to understand the driving force of KSB (Bartikowski and Walsh, 2014; Hung *et al.*, 2015; Lai and Chen, 2014). In this study, we chose online KSI as the final target because KSI is the best predictor of KSB (Hsieh *et al.*, 2008). Intentions have been proven to have a strong correlation with behaviors in a study by Ajzen (1991). Besides, in the knowledge sharing literature, previous studies have also used KSI as a reliable proxy for actual KSB (Bock *et al.*, 2005; Cho *et al.*, 2010; Chow and Chan, 2008; Huang *et al.*, 2011; Lai and Chen, 2014; Tohidinia and Mosakhani, 2010).

According to the TPB, KSI is determined by three antecedents: attitudes, SN, and perceived behavior control (PBC) (Ajzen, 1991). In turn, individual intention can predict the behavior (Ajzen, 1991). Attitudes toward knowledge sharing refer to the degree of favourable evaluations of KSB (Ajzen, 1991). Attitudes have long been reported to influence KSI (Pavlou & Fygenson, 2006). For example, Bock *et al.* (2005) surveyed with thirty organizations and found that attitudes toward knowledge sharing positively and significantly affect KSI. Brown and Venkatesh (2005) applied TPB to examine factors affecting household technology adoptions. Their results showed that attitudes toward information technology

usage positively affect technology adoption intentions. Many empirical studies of other researchers also supported the positive influence of attitudes on KSI (Bock and Kim, 2002; Ho et al., 2011; Lin and Lee, 2004; Ryu et al., 2003; Tohidinia and Mosakhani, 2010). However, Amichai-Hamburger *et al.* (2016) argue that posters tend to have stronger motivation to transform attitudes toward online knowledge to KSI because compared to lurkers, posters often have higher tendency to share their knowledge to others. Lurkers seem to be satisfied with reading and browsing rather than posting (Amichai-Hamburger *et al.*, 2016). Thus, we hypothesize:

H3. Attitudes toward online knowledge sharing have a stronger positive influence on online knowledge sharing intentions of posters than lurkers.

SN refers to the perceived social pressure to share knowledge per expectations (Ajzen, 1991). In several previous studies, SN has been shown to be an essential determinant of KSI (Bock *et al.*, 2005; Tohidinia and Mosakhani, 2010). This means that if employees think that they are expected to share knowledge, they will have intentions to do so, and are more likely to exhibit the expected behavior. In an organisation, employees are often encouraged to share knowledge to create a favourable environment to help each other to achieve organisational goals (Nguyen and Malik, 2020). Ajzen (1991) argue that employees, as members of an organisation will tend to have a strong sense of group identity; thus, they rely on social norms to make behavioural decisions. In other words, employees are often influenced by organisational culture and expectation to share knowledge to help each other to complete tasks and increase job performance. Furthermore, posters tend to be more influenced by social norms than lurkers because posters often share knowledge; thus, more expectation is placed on posters than lurkers in knowledge sharing (Tohidinia and Mosakhani, 2010). Lurkers rarely or never share knowledge. Therefore, they are not expected by others as much

as posters in knowledge sharing (Sun *et al.*, 2014). Accordingly, we hypothesize:

H4. Social Norms have a stronger positive influence on the online knowledge sharing intentions of posters than lurkers.

A positive relationship between PBC and KSI has been identified in the literature (Ho *et al.*, 2011; Lin and Lee, 2004; Tohidinia and Mosakhani, 2010). PBC refers to the perceived ease or difficulty in performing KSB and is assumed to reflect the experience and expected impediments (Ajzen, 1991). If employees perceive the ease of knowledge sharing, they tend to have a feeling that knowledge sharing is under their control. As a result, they are more likely to carry out KSB. Hung *et al.* (2015) emphasised that PBC serves as a salient element that makes posters and lurkers confident about their availability and ability to contribute to the organisation through knowledge sharing. However, posters tend to be more confident than lurkers because they get used to posting behaviour; therefore, they are more likely to engage in online knowledge sharing (Lai and Chen, 2017).

Furthermore, posters spent significant time and made a great effort in sharing knowledge because the act of knowledge sharing involves explicating and codifying knowledge which includes the time and effort spent codifying knowledge (Kankanhalli *et al.*, 2005). Posters need to perceived behavior control regarding their availability, time and sharing tools to have the intention to share knowledge (Kankanhalli *et al.*, 2005). In contrast, lurkers tend to feel that reading or browsing is enough for their information needs (Sun *et al.*, 2014). Even lurkers perceived behavioural control in knowledge sharing, and they are less likely to transform it to knowledge sharing intention than posters (Amichai-Hamburger *et al.*, 2016). Thus, we posit as follows:

H5. Perceived behavioral control has a stronger positive influence on the online knowledge sharing intention by posters than lurkers.

Figure 1 shows the conceptual model with all the hypotheses.

< Insert figure 1 about here >

Methodology

Research design and procedure

The authors used quantitative research design with a field-survey to collect data and tested all the hypotheses using structural equation modeling (SEM) approach with AMOS 25.0. The target population of this study was employees who take part in the online knowledge sharing systems in Vietnamese telecommunication organizations. For selecting the industry, following other research (Kim and Lee, 2006; Tohidinia and Mosakhani, 2010), we primarily considered two criteria, the importance of knowledge management practices and appropriate information technology infrastructures for online knowledge sharing. Therefore, the telecommunication industry was chosen as the target industry. Akhavan and Mahdi Hosseini (2016) also confirmed that the telecommunication industry is suitable for data collection.

An invitation email with the survey link to the web-based questionnaire was sent to companies from different sectors of the Vietnamese telecommunications industry. The emails briefly introduced the purpose of the study. Participation was entirely voluntary, and the respondents were informed that there were no right or wrong answers; thus, they could respond as truthfully and accurately as possible. In addition, respondents were informed that their responses to the survey were anonymous and would be confidentially treated. In order to facilitate respondents' answering of the questionnaires, online knowledge-sharing platforms in an organization were explained as any organizational platforms used for knowledge sharing among employees, such as forums, intranets, and weblogs. Three screening questions were added at the beginning of the questionnaire to ensure the respondents were eligible. For

instance, a selected respondent should confirm that they had an understanding of online knowledge-sharing platforms and that they had participated in their organizational online knowledge-sharing platforms and used them in the last 12 months. Finally, 501 complete questionnaires were collected with 54.1% male respondents. Participants aged 31 to 40 years account for 51.1%, followed by those aged 18 to 30 years (36.7%), 41 to 50 years (11.4%), and more than 60 years (.8%). The majority (86.1%) are educated to university degree level or higher. Table 1 shows the demographics of the respondents.

< Insert Table 1 about here >

In order to ensure the appropriateness of datasets, we conducted a t-test of all variables comparing the early respondents (65%) and the late respondents (35%). No statistically significant difference ($p < .05$) was found, revealing no nonresponse bias. In order to divide participants into two groups: posters and lurkers, this study adopted the definition of a lurker by Marett and Joshi (2009) and following Nonnecke *et al.* (2004), wherein posters were classified as those who had written at least one post during the last three months, lurkers were those who had not posted during that period. Of a total of 501 responses, 383 responses that were completed and considered usable were by posters, and 118 responses were by lurkers.

Questionnaire design and measures

All items to measure the key constructs in the survey were adapted from previous studies to ensure content validity. There were eight constructs in the research model, with each item using a seven-point Likert scale anchored from 1 as “strongly disagree” to 7 as “strongly agree”. The self-efficacy measure was adapted from Kumar and Rose (2012). Items of self-enjoyment were adopted from Washo and Faraj (2000). The measure of reciprocity was adapted from Kankanhalli *et al.* (2005), whereas the measure of rewards, attitudes toward

knowledge and KSI were adopted from Lin (2007). SN and PBC were adopted from Chuang *et al.* (2015) and Akhavan *et al.* (2015), respectively. The questionnaire was developed in English and translated into Vietnamese via an iterative process by two bilingual scholars with fluent knowledge of Vietnamese and English. A back-translation process was then conducted by another bilingual scholar of Vietnamese and English in which the questionnaire was translated back to English in order to make sure both the English and Vietnamese versions were comparable and contained a high degree of accuracy.

A web-based questionnaire was developed using the Survey Monkey web application. The questionnaire was structured into three parts, namely, motivation, KSB, and demographics. In the questionnaire, a short introductory note included a description of “knowledge” and “knowledge sharing”, so that participants could easily understand the nature of the questions that followed. A pre-test and pilot test were conducted to validate all the instruments. Five experts working in the field of online knowledge sharing were invited to evaluate the consistency of the English–Vietnamese translation, the format and length of the survey, and the meaning, ordering, and clarity of questions. The pilot test was conducted with 30 employees who are members of the online knowledge sharing systems in their organizations. The results showed accepted reliabilities for the measures.

Data analysis and results

Measurement model

The measurement of reliability and convergent and discriminate validities were assessed following Fornell and Larcker (1981). Two items (ATT4 and PBC4) were dropped to improve reliability. Both Cronbach’s alpha values and composite reliabilities are higher than the recommended level of .70 (Nunnally, 1994). All the factor loadings are also above .60

(Hair *et al.*, 2014) and all average variance extracted (AVE) values exceed the threshold value of 0.50, showing convergent validity (Fornell and Larcker, 1981). Finally, square roots of the AVE values for each construct is larger than their correlations with other constructs, showing discriminant validity (Fornell and Larcker, 1981). Table 2 and 3 show these results.

< Insert tables 2 & 3 about here >

The common method bias was diagnosed based on the single-factor method (Podsakoff *et al.*, 2003). Results indicate that the χ^2/df value is 15.19, which is greater than the cutoff value of 5.0, showing a poor fit (Hair *et al.*, 2014). As advised by Lindell and Whitney (2001), gender was used as a marker variable in the marker variable technique. The results of the partial correlation procedure revealed that the inclusion of the marker variable did not change the postulated relationships and their significance. Thus, common method bias was not an issue in this study. Finally, VIF scores of all constructs ranged from 1.37 to 3.05, well below the threshold of 3.3 recommended by Bharati *et al.* (2015), ruling out multicollinearity.

Structural model

All the hypotheses were tested by assessing the structural model. The model had acceptable fit indices: $\chi^2/df= 2.34$; CFI = .94; TLI = .93; and RMSEA = .05. The structural model for the posters and lurkers subgroups was also estimated (see Table 4). The R-squares for attitudes toward knowledge sharing and KSI are over .70 for the posters and lurkers, indicating that the model explains more than 70% of the variance in the attitude variable for both groups. First, self-efficacy and reciprocity significantly affect attitudes in the poster group (self-efficacy: $\beta_{\text{poster}} = .21$, $p < .01$; reciprocity: $\beta_{\text{poster}} = .33$, $p < .01$) but have no effect in the lurker group (self-efficacy: $\beta_{\text{lurker}} = .06$, $p > .05$; reciprocity: $\beta_{\text{lurker}} = .03$, $p > .05$); thus H1a and H2a are supported. Self-enjoyment positively affects attitudes in both groups ($\beta_{\text{poster}} = .43$,

$p < .001$; $\beta_{\text{lurker}} = .77$, $p < .001$). The t-test results in Table 5 shows that the impact of self-enjoyment on attitudes for lurkers is stronger than for the posters, thus H1b is not supported. Furthermore, rewards have a significant negative effect on attitudes toward knowledge sharing in the poster group but not in the lurker group ($\beta_{\text{poster}} = -.10$, $p < .05$; $\beta_{\text{lurker}} = .01$, $p > .05$); thus, H2b is also not supported. Next, attitudes ($\beta_{\text{poster}} = .30$, $p < .001$; $\beta_{\text{lurker}} = .24$, $p < .001$) and SN ($\beta_{\text{poster}} = .60$, $p < .001$; $\beta_{\text{lurker}} = .64$, $p < .001$) have significant positive effects on KSI but t-test results in Table 5 show no significant differences between the two groups; thus, H3 and H4 are also not supported. Finally, the results show no significant effect from PBC on KSI ($\beta_{\text{poster}} = .02$, $p > .05$; $\beta_{\text{lurker}} = .09$, $p > .05$); thus, H5 is also not supported. Figure 2 shows these results.

< Insert tables 4 & 5 and figure 2 about here >

Discussion and implications

Building on from previous studies (Akhavan *et al.*, 2015; Hsu and Lin, 2008; Lin, 2007; Tohidinia and Mosakhani, 2010), this study advances the understanding of the differences of driving factors of KSI between posters and lurkers in an organization through the integration of both intrinsic and extrinsic motivation types into TPB. Accordingly, we (1) validate TPB in online organizational knowledge sharing in an emerging economy; (2) highlight the role of salient factors of intrinsic motivation (self-efficacy and self-enjoyment) and of extrinsic motivation (rewards and reciprocity) in encouraging employees to share knowledge online; and (3) examine the difference in the relationships posited in the research model between the poster group and the lurker group. The following significant findings of this study contribute to our collective understanding of key factors driving employees' online KSI.

First, TPB is validated in the Vietnamese context and shows its power in explaining KSI in an emerging economy. Attitudes toward online knowledge sharing and SN have a

significantly positive effect on employees' online KSI. This result supports the findings of previous studies (Akhavan *et al.*, 2015; Hsu and Lin, 2008; Lin, 2007; Tohidinia and Mosakhani, 2010), indicating the significant influence of attitudes and SN on KSI in the knowledge sharing process in an organization. The findings of this study show that the impact of SN is twice that of attitudes on KSI both in the poster and lurker groups. This suggests that SN is crucial and have more influences on attitudes. This finding contrasts with other research such as the studies by Jeon *et al.* (2011) and Chen *et al.* (2009), which showed that the influence of attitudes towards online knowledge sharing on KSI was much stronger.

The differences in this research may stem from the differences in cultural values in the Vietnamese context. These researchers investigated online knowledge sharing in an open online community where anyone also can participate. In online communities, participants often do not know each other, and their attitudes, rather than SN determine their KSI because knowledge sharing is entirely voluntary. In contrast, this study examines online knowledge sharing among employees in an organization. By working together to achieve organizational goals collectively, employees tend to know each other well. They want to manifest their working enthusiasm in front of the chief executive officer, superior, or colleagues to show their abilities and maintain their position and role in the organization. Thus, the more substantial influence of social pressure than attitudes on their intentions or behaviour is understandable. This is true for both posters and lurkers. Another possible reason is that the study was conducted in Vietnam, where employees are often characterized by collectivism. With the characteristics of collectivism, Vietnamese employees tend to cooperate and act as members of a cohesive group (Nguyen *et al.*, 2019); thus, Vietnamese employees tend to be influenced by subjective norm more.

Second, contrary to our hypothesis, PBC does not significantly affect online KSI. This

result is aligned with those by Chatzoglou and Vraimaki (2009) and Shah and Mahmood (2013) who also could not find any significant effect on the association between PBC and KSI. One possible reason for this result is that online knowledge sharing systems in an organization have become common along with the development of information and technology. Employees seem not to find difficulty in using these systems. As a result, the perception of constraints of using the systems is not the issue affecting employees' online KSI. Employees seem to have complete volitional control in online knowledge sharing.

Third, the results show that self-enjoyment motivates both posters and lurkers' KSI to have attitudes toward online knowledge sharing. Self-enjoyment exerts the strongest positive impact on attitudes toward knowledge sharing of all participants. Our results consolidate the findings of Liao *et al.* (2013), showing that self-enjoyment is the strongest driver of attitudes toward knowledge sharing. If employees perceive that knowledge sharing is enjoyable, they are prone to have positive attitudes toward knowledge sharing (Hung *et al.*, 2015).

Interestingly, we go beyond that by indicating self-enjoyment is the only motivator that can change lurkers' attitudes toward knowledge sharing. As expected, the impact of self-enjoyment on KSI is much stronger for lurkers than posters, almost doubled. This implies that self-enjoyment is a key to making silent participants – lurkers – voice their ideas and opinions and encouraging posters to be more active in sharing knowledge. Organizational managers may consider several strategies for reinforcing the impact of self-enjoyment as it may lead to the desired behavior change in employees, and in particular, lurkers.

Fourth, self-efficacy, reciprocity and rewards can differentiate posters from lurkers when they affect only posters' attitudes toward knowledge sharing. When posters are confident about their knowledge, implying a high level of self-efficacy, the stronger attitudes toward online knowledge sharing they have. Also, posters often have a high expectation of

reciprocity. Due to working in the same workplace, posters tend to share knowledge online with the expectation that their future knowledge requests will be met by others (Yang *et al.*, 2017). This expectation is reasonable because to obtain valuable knowledge, employees often have to make much effort and time. They are not willing to give it easily unless they expect others to also participate actively in sharing knowledge. Consequently, the firm belief for return in the future will motivate employees who are active in sharing knowledge.

Final, rewards, contrary to our expectation, hinder the development of posters' attitudes. This result coincides with the findings of Bock *et al.* (2005) and Amayah (2013) who expected to find that rewards had a positive impact on KSI, but the result was the opposite. This could be explained by the fact that tangible rewards, such as bonuses, promotions or job security, may have a punitive effect because those who expected to receive rewards would be disappointed if they did not (Bock *et al.*, 2005). Besides, as such kinds of rewards cannot be given to everyone, rewards may make employees see each other as competitors, leading to a negative impact on their relationship (Amayah, 2013). In contrast, lurkers are considered invisible participants regardless of their confidence in their knowledge or their high expectation for return or rewards. Amichai-Hamburger *et al.* (2016) explained that there are some other factors involved, such as time available or personality. Thus, these motivators are hardly to persuade lurkers to move out of their silent zone and to share knowledge actively.

Theoretical contribution

This study makes several significant contributions to the literature. First, to our knowledge, the study is the first one that lends support to TPB in the context of online organizational knowledge sharing in an emerging economy. TPB has been validated in knowledge sharing, but few studies have examined TPB in organizational online knowledge sharing. Applying TPB in organizational online knowledge sharing, especially in an emerging economy such as

Vietnam, contributes considerably to the literature because it shows the power of TPB in explaining the individual psychology underlying behavior.

Second, our study also expands TPB and clarifies the roles of both intrinsic and extrinsic motivation in driving online KSI in the context of a single research study. By establishing the mediating role of attitudes toward knowledge sharing, intrinsic and extrinsic motivation shows their indirect impacts on KSI. As one of the few attempts to integrate motivation into TPB, this study provides valuable insights into the driving forces that motivate employees in online knowledge sharing.

Third, this study contributes to an increased understanding of motivation theories in online knowledge sharing in the organizational context. Our results demonstrate that extrinsic motivation is significant because it can directly motivate employees' attitudes towards online knowledge sharing and/or amplify the relationship between intrinsic motivation and attitudes. Thus, the study extends the theoretical literature and serves as a guideline for future research that can consider investigating the moderating effect of extrinsic motivation.

Fourth, the systematic comparison between posters and lurkers provides a more comprehensive picture of the online knowledge sharing process in an organization. In particular, the attitudes toward knowledge sharing and SN affect KSI. Only self-enjoyment drives lurkers' attitudes toward knowledge sharing, whereas all intrinsic and extrinsic motivators drive posters' attitudes. These findings emphasize the theoretical importance of differentiating two kinds of participants in online knowledge sharing as their behavioural patterns are not similar, and their motivation in online knowledge sharing in organizations are different.

Managerial implications

This study makes several contributions to practitioners. First, if managers want to use their human resources wisely, they should pay more attention to subjective norms and attitudes toward knowledge sharing as they can motivate all employees to share knowledge and make personal knowledge become part of organizational capital. For subjective norms, managers should emphasize on the importance of online knowledge sharing in the organization. To do that, managers could consider online knowledge sharing systems to become formal channels when distributing organizational information and events. Alternatively, managers could inform their employees that sharing valuable knowledge in order to improve job performance or generate new ideas is a form of a contribution to the organization.

For organizations to increase employee attitudes toward knowledge sharing, motivators such as self-efficacy, self-enjoyment, reciprocity, and rewards should be mentioned. Of these motivators, self-enjoyment is the most important both for posters and lurkers. Organizations should create a favourable knowledge sharing environment to motivate employees to share knowledge online. Developing a user-friendly interface can also enhance the level of enjoyment when sharing knowledge online (Liao *et al.*, 2013; Ridings *et al.*, 2006).

Since self-efficacy and reciprocity are two driving factors of posters' attitudes toward online knowledge sharing, more significant endeavor needs to be made to develop posters' knowledge confidence and the bonds among posters. Positive feedback for each of their postings would be useful for building self-efficacy. A rating system could be established for the evaluation of useful knowledge shared. Different tiers or a hierarchy of membership could be used to motivate posters to progress to higher levels based on their contribution. Boosting bonds among posters may help to increase reciprocity when all of them are active in sharing knowledge online. Regular face-to-face gatherings may also expand the relationships among employees. Tangible rewards, such as higher salary or bonuses, may hurt posters' attitudes

towards online knowledge sharing; however, rewards help to strengthen the impact of self-efficacy on attitudes towards on knowledge sharing in the poster group. Therefore, rewards could be used in the early stage of online knowledge-sharing platforms to reinforce attitudes.

Limitations and future research

As with all empirical studies, our study suffers some limitations, which present avenues for future research. First, when examining motivation in online knowledge sharing in organizations, building from prior studies (Lin, 2007; Nguyen *et al.*, 2019), we limited our focus to the salient factors: self-efficacy and self-enjoyment for intrinsic motivation, and reciprocity and rewards for extrinsic motivation. Future researchers may consider incorporating additional motivational factors to provide a more comprehensive picture for further understanding of the online knowledge sharing process in organizations. Second, in this research, tangible rewards such as bonuses or promotions were found to harm posters' attitudes toward online knowledge sharing. We suggest that future research investigates intangible rewards, such as verbal compliments, to further understand the role of rewards and the differences in the driving forces of two different rewards, tangible and intangible, in the online knowledge sharing process.

Second, we collected data from telecommunication organizations. The external validity of this study could be extended if the research model were applied to multiple types of industries. It is also worth noting that this study was carried out in Vietnam, which has a moderate collectivist culture (Hofstede, 2001). Therefore, caution is required when interpreting the findings because cultural influences need to be taken into account. For further validity, the model of this study should be applied to samples in different countries or different cultures (Bock *et al.*, 2005).

Third, the poster and lurker groups in this study were dichotomized based on the definition of Marett and Joshi (2009) and Nonnecke *et al.* (2004) where posters are those who posted at least once during the three months, and lurkers are those who made no post. However, future studies may deepen the understanding of the poster group by dividing them into those who post infrequently and those who post frequently. Fourth, this study considered online KSI as the primary outcome without examining KSB, because intention suffices as an indicator of an overall tendency toward online KSB (Erden et al., 2012). However, future researchers should take KSB into account in their analyses because employees do not always perform online KSB, which is consistent with their espoused intentions. Fifth, we used survey questionnaires to collect data. The findings of this study could be cross-validated by employing multiple measures, such as interview and focus groups.

References

- Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.
- Akhavan, P., Hosseini, S.M. Abbasi, M. and Manteghi, M. (2015), "Knowledge-sharing determinants, behaviors, and innovative work behaviors: An integrated theoretical view and empirical examination", *Aslib Journal of Information Management*, Vol. 67 No. 5, pp. 562-591.
- Akhavan, P., Jafari, M. and Fathian, M. (2005), "Exploring the failure factors of implementing knowledge management system in the organizations", *Journal of Knowledge Management Practice*, Vol. 6, pp. 1-8.
- Akhavan, P. and Mahdi Hosseini, S. (2016), "Social capital, knowledge sharing, and innovation capability: an empirical study of R&D teams in Iran", *Technology Analysis & Strategic Management*, Vol. 28 No.1, pp. 96-113.
- Al-Alawi, A.I., Al-Marzooqi, N.Y., and Mohammed, Y.F. (2007), "Organizational culture

- and knowledge sharing: critical success factors”, *Journal of Knowledge Management*, Vol. 11 No. 2, pp. 22-42.
- Amabile, T.M. (1993), “Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace”, *Human Resource Management Review*, Vol. 3 No. 3, pp. 185-201.
- Amayah, A.T. (2013), “Determinants of knowledge sharing in a public sector organization”, *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 454-471.
- Amichai-Hamburger, Y., Gazit, T. Bar-Ilan, J. Perez, O. Aharony, N. Bronstein, J., and Dyne, T.S (2016), “Psychological factors behind the lack of participation in online discussions”, *Computers in Human Behavior*, Vol. 55, pp. 268-277.
- Babcock, P. (2004), “Shedding light on knowledge management”, *HR magazine*, Vol. 49 No. 5, pp. 46-51.
- Bandura, A. (1977), “Self-efficacy; toward a unifying theory of behavioral change”, *Psychological Review*, Vol. 84 No. 3, pp. 191-215.
- Bartikowski, B. and Walsh, G. (2014), “Attitude contagion in consumer opinion platforms: posters and lurkers”, *Electronic Markets*, Vol. 24 No. 3, pp. 207-217.
- Bartol, K.M. and Srivastava, A. (2002), “Encouraging knowledge sharing: The role of organizational reward systems”, *Journal of Leadership & Organizational Studies*, Vol. 9 No. 1, pp. 64-76.
- Bharati, P., Zhang, W. and Chaudhury, A. (2015), “Better knowledge with social media? Exploring the roles of social capital and organizational knowledge management”, *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 456-475.
- Bishop, J. (2007), “Increasing participation in online communities: A framework for human-computer interaction”, *Computers in Human Behavior*, Vol. 23 No. 4, pp. 1881-1893.
- Bock, G.W. and Kim, Y.G. (2002), “Breaking the myths of rewards: An exploratory study of

- attitudes about knowledge sharing”, *Information Resources Management Journal*, Vol. 15 No. 2, pp. 14-21.
- Bock, G.W., Zmud, R.W., Kim, Y.G. and Lee, J.N. (2005), “Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate”, *MIS Quarterly*, Vol. 9 No. 1, pp. 87-111.
- Brown, S.A. and Venkatesh, V. (2005), “Model of adoption of technology in households: A baseline model test and extension incorporating household life cycle”, *MIS Quarterly*, Vol. 29 No. 3, pp. 399-426.
- Cabrera, A., Collins, W.C. and Salgado, J.F. (2006), “Determinants of individual engagement in knowledge sharing”, *The International Journal of Human Resource Management*, Vol. 17 No. 2, pp. 245-264.
- Carrillo, P. (2004), “Managing knowledge: lessons from the oil and gas sector”, *Construction Management and Economics*, Vol. 22 No. 6, pp. 631-642.
- Charband, Y., & Navimipour, N. J. (2016). Online knowledge sharing mechanisms: A systematic review of the state of the art literature and recommendations for future research. *Information Systems Frontiers*, Vol. 18 No. 6, pp. 1131-1151.
- Chang, H.H. and Chuang, S.S. (2011), “Social capital and individual motivations on knowledge sharing: Participant involvement as a moderator”, *Information & Management*, Vol. 48 No. 1, pp. 9-18.
- Chatzoglou, P.D. and Vraimaki, E. (2009), “Knowledge-sharing behavior of bank employees in Greece”, *Business Process Management Journal*, Vol. 15 No. 2, pp. 245-266.
- Chen, C.C. (2011), “Factors affecting high school teachers’ knowledge-sharing behaviors”, *Social Behavior and Personality*, Vol. 39 No. 7, pp. 993-1008.
- Chen, I.Y., Chen, N.S. and Kinshuk. (2009), “Examining the factors influencing participants’ knowledge sharing behavior in virtual learning communities”, *Educational Technology*

- & *Society*, Vol. 12 No. 1, pp. 134-148.
- Cho, H., Chen, M. and Chung, S. (2010), "Testing an integrative theoretical model of knowledge-sharing behavior in the context of Wikipedia", *Journal of the American Society for Information Science and Technology*, Vol. 61 No.6, pp. 1198-1212.
- Chow, W.S. and Chan, L.S. (2008), "Social network, social trust and shared goals in organizational knowledge sharing", *Information & Management*, Vol. 45 No. 7, pp. 458-465.
- Chuang, S.S., Chen, K.S. and Tsai, M.T.(2015), "Exploring the antecedents that influence middle management employees' knowledge-sharing intentions in the context of total quality management implementations", *Total Quality Management & Business Excellence*, Vol. 26 No. 1-2, pp. 108-122.
- Constant, D., Kiesler, S. and Sproull, L. (1994), "What's mine is ours, or is it? A study of attitudes about information sharing", *Information Systems Research*, Vol.5 No. 4, pp. 400-421.
- Cummings, J.N. (2004), "Work groups, structural diversity, and knowledge sharing in a global organization", *Management Science*, Vol. 50 No. 3, pp. 352-364.
- Erden, Z., Von Krogh, G. and Kim, S. (2012), "Knowledge sharing in an online community of volunteers: the role of community munificence", *European Management Review*, Vol.9 No. 4, pp. 213-227.
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.
- Gagné, M., Tian, A. W., Soo, C., Zhang, B., Ho, K. S. B., & Hosszu, K. (2019). "Different motivations for knowledge sharing and hiding: The role of motivating work design", *Journal of organisational behavior*, Vol. 40 No. 7, pp. 783-799.

- Gong, Y.P., Wu, J.F. Song, L.J.W. and Zhang, Z. (2017), "Dual tuning in creative processes: Joint contributions of intrinsic and extrinsic motivational orientations", *Journal of Applied Psychology*, Vol. 102 No. 5, pp. 829-844.
- Hair, J.F., Black, W.C. Babin, B.J. and Anderson, R.E. (2014), "*Multivariate data analysis*", 7th ed. Harlow, Essex: Pearson Education Limited.
- Hau, Y.S., Kim, B. & Lee, H.(2016), "What drives employees to share their tacit knowledge in practice?", *Knowledge Management Research & Practice*, Vol. 14 No. 3, pp. 295-308.
- Ho, S.C., Ting, P.H., Bau, D.Y. and Wei, C.C. (2011), "Knowledge-sharing intention in a virtual community: A study of participants in the Chinese wikipedia", *Cyberpsychology, Behavior, and Social Networking*, Vol. 14 No. 9, pp. 541-545.
- Hofstede, G. (2001), "Culture's recent consequences: Using dimension scores in theory and research", *International Journal of Cross Cultural Management*, Vol. 1 No.1, pp. 11-17.
- Hsieh, J.J.P.-A., Rai, A. and Keil, M. (2008), "Understanding digital inequality: comparing continued use behavioral models of the socio-economically advantaged and disadvantaged", *MIS Quarterly*, Vol. 32 No. 1, pp. 97-126.
- Hsu, C.L. and Lin, J.C.C. (2008), "Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation", *Information & Management*, Vol. 45 No. 1, pp. 65-74.
- Hsu, M.H., Ju, T.L., Yen, C.H. and Chang, C.M. (2007), "Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations", *International Journal of Human-Computer Studies*, Vol. 65 No. 2, pp. 153-169.
- Hu, L., and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure

- analysis: Conventional criteria versus new alternatives”, *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No.1, pp. 1-55.
- Huang, Q., Davison, R.M. and Gu, J. (2008), “Impact of personal and cultural factors on knowledge sharing in China”, *Asia Pacific Journal of Management*, Vol. 25 No. 3, pp. 451-471.
- Huang, Q., Davison, R.M. and Gu, J. (2011), “The impact of trust, guanxi orientation and face on the intention of Chinese employees and managers to engage in peer-to-peer tacit and explicit knowledge sharing”, *Information Systems Journal*, Vol. 21 No. 6, pp. 557-577.
- Hung, S.Y., Durcikova, A. Lai, H.M. and Lin, W.M. (2011), “The influence of intrinsic and extrinsic motivation on individuals’ knowledge sharing behavior”, *International Journal of Human-Computer Studies*, Vol. 69 No. 6, pp. 415-427.
- Hung, S.Y., Lai, H.M. and Chou, Y.C. (2015), “Knowledge-sharing intention in professional virtual communities: A comparison between posters and lurkers”, *Journal of the Association for Information Science and Technology*, Vol. 66 No. 12, pp. 2494-2510.
- Iglesias-Pradas, S., Hernández-García, Á., and Fernández-Cardador, P. (2017), “Acceptance of Corporate Blogs for Collaboration and Knowledge Sharing”, *Information Systems Management*, Vol.34 No. 3, pp. 220-237.
- Jeon, S., Kim, Y.G. and Koh, J. (2011), “An integrative model for knowledge sharing in communities-of-practice”, *Journal of Knowledge Management*, Vol. 15 No. 2, pp. 251-269.
- Kankanhalli, A., Tan, B.C. and Wei, K.K. (2005b), “Contributing knowledge to electronic knowledge repositories: an empirical investigation”, *MIS Quarterly*, pp. 113-143.
- Kim, S. and Lee, H.. (2006), “The impact of organizational context and information technology on employee knowledge-sharing capabilities”, *Public Administration*

- Review*, Vol. 66 No. 3, pp. 370-385.
- Kumar, N. and Rose, R.C. (2012), “The impact of knowledge sharing and Islamic work ethic on innovation capability”, *Cross Cultural Management: An International Journal*, Vol. 19 No. 2, pp. 142-165.
- Kwahk, K.Y. and Park, D.H. (2016), “The effects of network sharing on knowledge-sharing activities and job performance in enterprise social media environments”, *Computers in Human Behavior*, Vol. 55, pp. 826-839.
- Lai, H.M. and Chen, T.T. (2014), “Knowledge sharing in interest online communities: A comparison of posters and lurkers”, *Computers in Human Behavior*, Vol. 35, pp. 295-306.
- Le, B. P., Lei, H., Phouvong, S., Than, T. S., Nguyen, T. M. A., Gong, J. (2018), “Self-efficacy and optimism mediate the relationship between transformational leadership and knowledge sharing”, *Social Behavior and Personality*, Vol. 46 No. 11, pp. 1833-1846.
- Le, P. B., & Lei, H. (2019), “Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organisational support”, *Journal of Knowledge Management*, Vol. 22 No. 3, pp. 527-547.
- Le, P. B., & Lei, H. (2018), “The mediating role of trust in stimulating the relationship between transformational leadership and knowledge sharing processes”, *Journal of Knowledge Management*, Vol. 22 No. 3, pp. 521-537.
- Lee, Y. L. A., Malik, A., Rosenberger III, P. J., and Sharma, P. (2020), “Demystifying the differences in the impact of training and incentives on employee performance: mediating roles of trust and knowledge sharing”, *Journal of Knowledge Management*, ahead-of-print. <https://doi.org/10.1108/JKM-04-2020-0309>
- Li, Z., Liu, X. Wang, W., Vatankhah Barenji, A. and Huang, G.Q. (2019), “CKshare: secured

- cloud-based knowledge-sharing blockchain for injection mold redesign”, *Enterprise Information Systems*, Vol. 13 No. 1, pp. 1-33.
- Liao, C., To, P.L. and Hsu, F.C. (2013), “Exploring knowledge sharing in virtual communities”, *Online Information Review*, Vol. 37 No. 6, pp. 891-909.
- Liao, S. and Chou, E.-y. (2012), “Intention to adopt knowledge through virtual communities: posters vs lurkers”, *Online Information Review*, Vol. 36 No.3, pp. 442-461.
- Lin, H.F. (2007), “Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions”, *Journal of Information Science*, Vol. 33 No. 2, pp. 135-149.
- Lin, H.F. and Lee, G.G. (2004), “Perceptions of senior managers toward knowledge-sharing behavior”, *Management Decision*, Vol. 42 No. 1, pp. 108-125.
- Lindell, M. K., and Whitney, D. J. (2001), “Accounting for common method variance in cross-sectional research designs”, *Journal of Applied Psychology*, Vol. 86 No. 1, pp. 114-121.
- Malik, A., Froese, F. J., and Sharma, P. (2020), “Role of HRM in knowledge integration: Towards a conceptual framework”, *Journal of Business Research*, Vol. 109, pp. 524-535.
- Malik, A., and Nilakant, V. (2016), “Knowledge integration mechanisms in high-technology business-to-business services vendors”, *Knowledge Management Research & Practice* Vol. 14, No. 4, pp. 565-574.
- Malinen, S. (2015), “Understanding user participation in online communities: A systematic literature review of empirical studies”, *Computers in Human Behavior*, Vol.46, pp. 228-238.
- Marett, K. and Joshi, K. (2009), “The decision to share information and rumors: Examining the role of motivation in an online discussion forum”, *Communications of the Association for information systems*, Vol. 24 No. 1, pp. 47-68.

- Matić, D., S. Cabrilo, Grubić-Nešić, L., and Milić, B. (2017), “Investigating the impact of organizational climate, motivational drivers, and empowering leadership on knowledge sharing”, *Knowledge Management Research & Practice*, Vol.15 No. 3, pp. 431-446.
- Mesmer-Magnus, J.R., and DeChurch, L.A. (2009), “Information sharing and team performance: A meta-analysis” *Journal of Applied Psychology*, Vol. 94 No. 2, pp.535-546.
- Nguyen, T.-M., Nham, T.P. Froese, F.J. and Malik, A. (2019), “Motivation and knowledge sharing: a meta-analysis of main and moderating effects”, *Journal of Knowledge Management*, Vol. 23 No.5, pp.998-1016.
- Nguyen, T. M., and Malik, A. (2020), “Cognitive processes, rewards and online knowledge sharing behaviour: the moderating effect of organisational innovation”, *Journal of Knowledge Management*. Vol. 24 No. 6, pp. 1241-1261
- Nguyen, T.-M. (2020). Four-dimensional model: A literature review in online organisational knowledge sharing *VINE Journal of Information and Knowledge Management Systems*. Vol. ahead-of-print No. ahead-of-print.
- Nonnecke, B., Preece, J. and Andrews, D. (2004), “*What lurkers and posters think of each other [online community]*”, Paper presented at the System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on.
- Nunnally, J.C. (1994), “*Psychometric theory*”, (3rd ed.) (3rd ed.). New York: McGraw-Hill.
- Pavlou, P.A. and Fygenson, M. (2006), “Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior”, *MIS Quarterly*, Vol. 30 No. 1, pp. 115-143.
- Pee, L. and Lee, J. (2015), “Intrinsically motivating employees’ online knowledge sharing: Understanding the effects of job design”, *International Journal of Information Management*, Vol. 35 No. 6, pp. 679-690.

- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- Radaelli, G., Lettieri, E. and Masella, C. (2015), "Physicians' willingness to share: a TPB-based analysis". *Knowledge Management Research & Practice*, Vol. 13 No. 1, pp. 91-104.
- Ridings, C., Gefen, D. and Arinze, B. (2006), "Psychological barriers: Lurker and poster motivation and behavior in online communities", *Communications of the Association for information systems*, Vol. 18 No. 1, pp. 329-354.
- Ryan, R.M. and Deci, E.L. (2000), "Intrinsic and extrinsic motivations: Classic definitions and new directions", *Contemporary educational psychology*, Vol. 25 No.1, pp. 54-67.
- Ryu, S., Ho, S.H., and Han, I. (2003), "Knowledge sharing behavior of physicians in hospitals", *Expert Systems with Applications*, Vol. 25 No. 1, pp. 113-122.
- Schulz, M. (2001), "The uncertain relevance of newness: Organizational learning and knowledge flows", *Academy of Management Journal*, Vol. 44 No. 4, pp. 661-681.
- Shah, S.R. and Mahmood, K. (2013), "Knowledge-sharing behavior in dairy sector of Pakistan", *Library Philosophy and Practice*, Vol. 917, pp. 1-9.
- Shao, Z., Feng, Y., and Wang, T. (2017), "Charismatic leadership and tacit knowledge sharing in the context of enterprise systems learning: the mediating effect of psychological safety climate and intrinsic motivation", *Behavior & Information Technology*, Vol. 36 No. 2, pp. 194-208.
- Spreitzer, G.M. (1995), "Psychological empowerment in the workplace: Dimensions, measurement, and validation", *Academy of Management Journal*, Vol. 38 No. 5, pp. 1442-1465.
- Sun, N., Rau, P.P.L., and Ma, L. (2014), "Understanding lurkers in online communities: A

- literature review”, *Computers in Human Behavior*, Vol. 38, pp. 110-117.
- Suppiah, V. and Sandhu, M.S. (2011), “Organizational culture's influence on tacit knowledge-sharing behavior”, *Journal of Knowledge Management*, Vol. 15 No. 3, pp. 462-477.
- Syed-Ikhsan, S.O.S., and Rowland, F. (2004), “Knowledge management in a public organization: a study on the relationship between organizational elements and the performance of knowledge transfer”, *Journal of Knowledge Management*, Vol. 8 No. 2, pp. 95-111.
- Tang, Q., Zhao, X. and Liu, S. (2016), “The effect of intrinsic and extrinsic motivations on mobile coupon sharing in social network sites: The role of coupon proneness”, *Internet Research*, Vol. 26 No. 1, pp. 101-119.
- Teo, T.S., Lim, V.K. and Lai, R.Y. (1999), “Intrinsic and extrinsic motivation in Internet usage”, *Omega*, Vol. 27 No. 1, pp. 25-37.
- Tohidinia, Z. and Mosakhani, M. (2010), “Knowledge sharing behavior and its predictors”, *Industrial Management & Data Systems*, Vol. 110 No. 4, pp. 611-631.
- van Mierlo, T. (2014), “The 1% rule in four digital health social networks: an observational study”, *Journal of Medical Internet Research*, Vol. 16 No. 2, e.33.
- Vansteenkiste, M., Neyrinck, B. Niemiec, C.P. Soenens, B. De Witte, H. and Van Den Broeck, A. (2007), “On the relations among work value orientations, psychological need satisfaction and job outcomes: A self-determination theory approach”, *Journal of Occupational and Organizational Psychology*, Vol. 80 No. 2, pp. 251-277.
- VonKortzfleisch, H.F. and Mergel, I. (2002), “Getting over “Knowledge is Power”: Incentive systems for knowledge management in business consulting companies”, *Knowledge Mapping and Management*, pp. 244-253.
- Walker, B., Redmond, I. and Lengyel, A. (2013), “Are they all the same? Lurkers and posters

- on the net”, *eCULTURE*, Vol. 3 No. 1, pp. 155-165.
- Washo, M., and Faraj, S. (2000), ““It is what one does”: Why people participate and help others in electronic communities of practice”, *The Journal of Strategic Information Systems*, Vol. 9 No. 2-3, pp. 155-173.
- Wasko, M.M., and Faraj, S. (2005), “Why should I share? Examining social capital and knowledge contribution in electronic networks of practice”, *MIS Quarterly*, Vol. 29 No. 1, pp. 35-57.
- Yang, J.T. (2007), “Knowledge sharing: Investigating appropriate leadership roles and collaborative culture”, *Tourism Management*, Vol. 28 No. 2, pp. 530-543.
- Yang, X., G. Li, and Huang, S.S. (2017), “Perceived online community support, member relations, and commitment: Differences between posters and lurkers”, *Information & Management*, Vol 54 pp. 154–165.
- Yu, T.K., Lu, L.C., and Liu, T.F. (2010), “Exploring factors that influence knowledge sharing behavior via weblogs”, *Computers in Human Behavior*, Vol. 26, pp. 32-41.
- Zhang, X., Liu, S., Deng, Z., and Chen, X. (2017), “Knowledge sharing motivations in online health communities: A comparative study of health professionals and normal users”, *Computers in Human Behavior*, Vol. 75, pp. 797-810.
- Zhao, L., B. Detlor, and Connelly, C.E. (2016), “Sharing knowledge in social Q&A sites: The unintended consequences of extrinsic motivation”, *Journal of Management Information Systems*, Vol. 33 No. 1, pp. 70-100.

Figure 1. Conceptual model

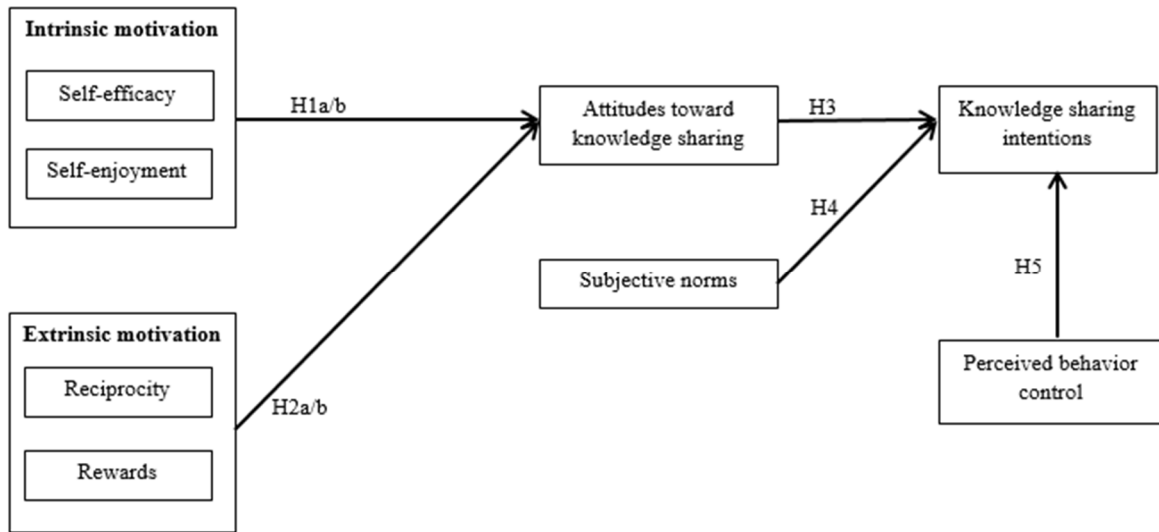
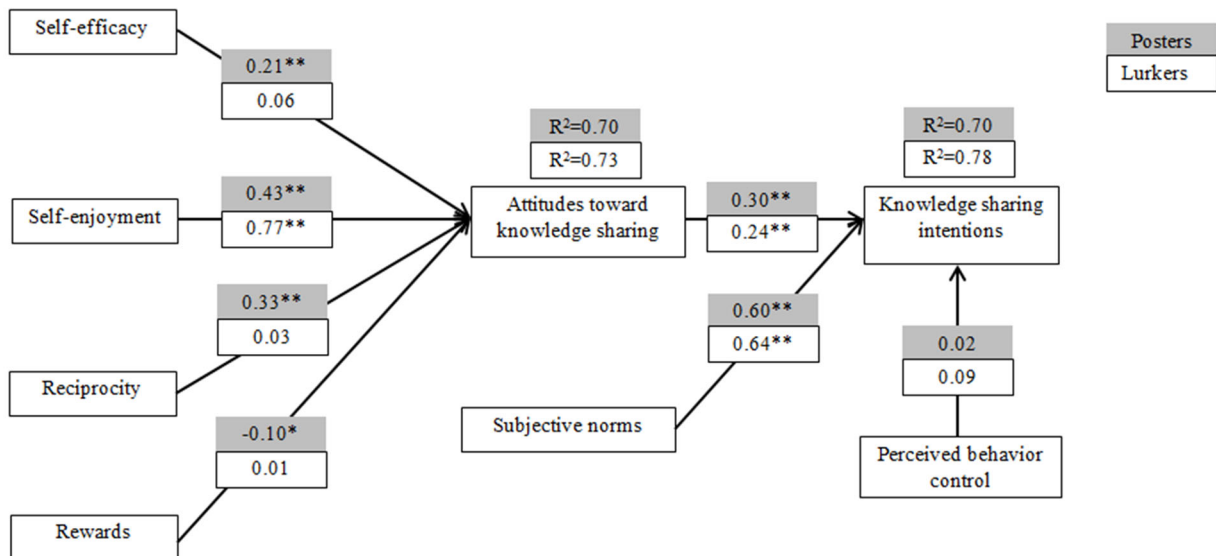


Figure 2. Multi-group analysis results



*p < .05; ** p < .001

Table 1. Demographics of the sample (N=501)

Characteristics		Frequency	%
<i>Gender</i>	Male	271	54.1
	Female	230	45.9
<i>Age</i>	18-20	5	1.0
	21-30	179	35.7
	31-40	256	51.1
	41-50	57	11.4
	≥ 51	4	.8
<i>Education</i>	High school and lower	4	.8
	Vocational school	22	4.4
	Technical college	44	8.8
	University	352	70.2
	Master or higher	79	15.8

Table 2. Scale items and descriptives

Factor	Item	λ	M	SD	
Knowledge self-efficacy (SEF)	SEF1	When sharing knowledge using online platforms, I feel confident in my knowledge to..... help colleagues to solve their problems	.85	4.81	1.45
	SEF2	help my organization to improve work processes	.88	4.93	1.45
	SEF3	help my organization to increase productivity	.86	4.78	1.53
	SEF4	help my organization to achieve performance objectives and outcomes	.87	5.00	1.39
Self-enjoyment (SEN)	SEN1	I enjoy using online platforms to share my knowledge with colleagues	.94	5.14	1.47
	SEN2	I enjoy using online platforms to help colleagues by sharing my knowledge with them	.94	5.21	1.46
	SEN3	Using online platforms to share my knowledge with others makes me feel good	.95	5.34	1.46
	SEN4	Using online platforms to share my knowledge with others gives me pleasure	.95	5.34	1.43
Reciprocity (REC)	REC1	When I use online platforms to share knowledge with colleagues, I believe that... it is fair and obligatory to help others because I know that other people will help me someday	.92	5.31	1.39
	REC2	other people will help me when I need help	.93	5.29	1.41
	REC3	other people will answer my questions regarding specific information and knowledge in the future	.94	5.24	1.36
	REC4	people who are involved will develop	.90	5.29	1.41

reciprocal beliefs on give and take based on other people's intentions and behavior					
		I use online platforms to share my knowledge because in return I will receive...			
Rewards (REW)	REW1	a higher salary	.93	4.36	1.81
	REW2	a higher bonus	.94	4.26	1.8
	REW3	increased promotion opportunities	.94	4.44	1.76
	REW4	increased job security	.89	4.75	1.7
		My online knowledge sharing with other colleagues is...			
Attitude (ATT)	ATT1	very pleasant	.94	5.17	1.37
	ATT2	very valuable	.95	5.27	1.33
	ATT3	very beneficial	.95	5.36	1.31
	ATT4*	very good			
		My CEO thinks that I should share my knowledge online with other colleagues in the organization			
Subjective norm (SNO)	SNO1	My CEO thinks that I should share my knowledge online with other colleagues in the organization	.94	5.17	1.33
	SNO2	My boss thinks that I should share my knowledge online with other colleagues in the organization	.94	5.13	1.37
	SNO3	My colleagues think that I should share my knowledge online with other colleagues in the organization	.95	5.2	1.28
	SNO4	Generally speaking, I try to follow the CEO's policy and intentions	.92	5.19	1.33
		I have enough time available to share knowledge online with my colleagues			
Perceived behavioral control (PBC)	PBC1	I have enough time available to share knowledge online with my colleagues	.77	3.7	1.65
	PBC2	I have the necessary tools to share knowledge online with my colleagues	.90	4.46	1.65
	PBC3	I have the ability to share knowledge with my colleagues	.90	4.66	1.46
	PBC4*	Sharing knowledge online with my colleagues is within my control			
		I intend to share knowledge online with my colleagues more frequently in the future			
Knowledge sharing intention (INT)	INT1	I intend to share knowledge online with my colleagues more frequently in the future	.95	5.27	1.31
	INT2	I will try to share knowledge online with my colleagues	.95	5.22	1.35
	INT3	I will always make an effort to share knowledge online with my colleagues	.96	5.26	1.37
	INT4	I intend to share knowledge online with colleagues who ask	.94	5.38	1.33

*ATT4 and PBC4 were dropped to improve reliability.
 λ = Standardized factor loading, M = Mean, SD = Standard deviation

Table 3. Correlations matrix

	SEF	SEN	REC	REW	SNO	ATT	PBC	KSI
SEF	.82							
SEN	.53	.93						
REC	.58	.63	.90					
REW	.41	.33	.26	.89				
SNO	.48	.58	.59	.26	.92			
ATT	.46	.54	.57	.20	.48	.92		
PBC	.29	.25	.25	.30	.38	.24	.79	
KSI	.55	.62	.66	.21	.67	.49	.32	.93
Mean	4.71	5.38	5.17	3.90	4.90	5.15	4.22	5.22
SD	1.11	1.21	1.24	1.70	1.15	1.20	1.18	1.23
AVE	.67	.86	.82	.79	.84	.85	.62	.86
CR	.89	.96	.95	.94	.96	.94	.83	.96

Note: The bold numbers in the diagonal row are the square roots of the average variances extracted (AVE). SEF = self-efficacy; SEN = self-enjoyment; REC = reciprocity; REW = rewards; ATT = attitudes toward knowledge sharing; SNO = subjective norms; PBC = perceived behavior control; KSI = knowledge sharing intentions; CR = composite reliability; AVE = average variances extracted

Table 4. Multi-group analysis

Hypothesis	Path	Poster (n=383)	Lurker (n=118)
<i>H1a</i>	SEF→ATT	0.21**	0.06
<i>H1b</i>	SEN→ATT	0.43**	0.77**
<i>H2a</i>	REC→ATT	0.33**	0.03
<i>H2b</i>	REW→ATT	-0.10*	0.01
<i>H3</i>	ATT→INT	0.30**	0.24**
<i>H4</i>	SNO→INT	0.60**	0.64**
<i>H5</i>	PBC→INT	0.02	0.09

SEF = self-efficacy; SEN = self-enjoyment; REC = reciprocity; REW = rewards; ATT = attitude towards knowledge sharing; SNO = subjective norm; PBC = perceived behavior control; INT = intention to share knowledge; *p<.05; **p<.001

Table 5. Tests of differences between posters (P) and lurkers (L)

Path	Coefficient		Statistical comparison of paths	Outcome
	Posters (n = 383)	Lurkers (n = 118)		
SEN→ATT	0.43**	0.77**	-2.85**	P < L
ATT→INT	0.30**	0.24**	0.69	
SNO→INT	0.60**	0.64**	-0.83	

Note: P and L indicates the relative importance for posters and lurkers respectively; SEN = self-enjoyment; ATT = attitude towards knowledge sharing; SNO = subjective norm; INT = intention to share knowledge; ** p < 0.01; * p < 0.05