



Research paper

In- and extra-role knowledge sharing among information technology professionals: The five-factor model perspective



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ABSTRACT

Knowledge is a valuable asset, and knowledge sharing (KS) among employees is particularly important in knowledge-based organizations. This study proposes and investigates two types of KS: in- and extra-role. In-role KS is based on role expectations, and extra-role KS extends beyond role expectations. This study also investigates the antecedents and consequences of the two types of KS among information technology (IT) professionals. The five-factor model is applied to build the research model. The results reveal that among IT professionals, openness to experience, conscientiousness, agreeableness, and neuroticism influence in- or extra-role KS. Unexpectedly, extroversion has no effect on either, indicating the unique behavior of IT professionals compared with others. The study also shows that both in- and extra-role KS have positive effects on team cohesion. Academic and practical implications are provided based on the research findings.

1. Introduction

Knowledge is considered one of the most important resources for creating core competitive advantages (Liu & Lai, 2010). Effective use of knowledge can help organizations achieve optimal performance and create successful business strategies in the globalized world. To reach this sort of success, employees must cooperate with and support one another by sharing knowledge, particularly in information technology (IT) companies that rely on teamwork. How to enhance knowledge sharing (KS) among IT professionals is a critical issue for practitioners and academia. In this study, KS is defined as the activity through which employees share their knowledge with other members of their teams/organizations. KS is necessary for a team's routine functions. Therefore, team members are expected to share knowledge according to their job positions or roles. In addition, more KS among team members than required by their roles may further enhance a team's communication, cooperation, and job performance. Although studies have considered KS among IT professionals (Kotlarsky & Oshri, 2005; Pee, Kankanhalli, & Kim, 2010; Taylor, 2004), most have featured an overall perspective and have not investigated KS based on employees' roles.

Role has been used to identify two types of behavior: in- and extra-role behavior (Organ, 1988). In-role behavior is based on job requirements and is considered to be tied to organizational rewards (Katz, 1964), while extra-role behavior involves going beyond job requirements and is considered to be proactive citizenship behavior (Organ, 1988). These types of role behavior have different antecedents in the workplace (Moideenkutty, Blau, Kumar, & Nalakath, 2006). One firm-

level study establishes similar classifications. Du, Lai, Cheung, and Cui (2012) identify two types of information sharing among supply chain partners: template-based (based on pre-specified agreements) and proactive (willing to help), which have different antecedents. A recent individual-level study also classifies KS into two types: responsive (a person provides knowledge when asked for help) and proactive (a person proactively shares new ideas or new learned knowledge with another person) (Zhang & Jiang, 2015), which also have different antecedents. Similarly, there may be two types of KS among employees based on what others expect of the role they play in the workplace. This study aims to fill the research gap by conceptualizing two types of KS based on role expectation and then investigating their antecedents and consequences in the specific context of IT professionals.

In this study, role expectations are defined as how people in an organization expect a person to act in a given position based on his/her job requirements. In-role KS refers to KS based on role expectations, while extra-role KS refers to KS that extends beyond role expectations. This classification differs from responsive and proactive KS in Zhang and Jiang (2015). It is not based on whether other people ask for help, but on how people share knowledge according to the roles they play in the workplace. For example, a manager is expected to disseminate information through meetings, which falls under in-role KS. When he/she shares more knowledge than the role expectation (e.g., to help some colleagues out of some dilemma, which is not a must), this falls under extra-role KS. In organizations, people are playing different roles and have different role expectations regarding their KS. Some studies have classified KS from different angles (e.g., explicit and implicit KS (Bock,

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Zumd, Kim, & Lee, 2005; Constant, 1994; Lee, 2001), the contribution and collection of knowledge based on direction (Chen & Hung, 2010; Foss, Minbaeva, Pedersen, & Reinhold, 2009; He & Wei, 2009), and the quality and quantity of KS (Chiu, Hsu, & Wang, 2006; Wasko & Faraj, 2005)). The in- and extra-role KS proposed in this study allow KS to be examined from a new perspective, together with the antecedents and consequences, which should further enrich the KS literature.

Studies have found many antecedents of KS from different perspectives (e.g., motivation (Bock et al., 2005; Lin, 2007), organizational climate (Bock et al., 2005), leadership (Liu & Phillips, 2011), and trust (Staples & Webster, 2008)). However, how employees' personality affects in- and extra-role KS remains unknown. Adopted from psychology, personality is becoming increasingly important in organizational behavior and information management studies. It has been proved as a critical factor for job satisfaction (Zhang, Wu, Miao, Yan, & Peng, 2014) and job performance (Oh & Berry, 2009; Poropat, 2009) in the area of organizational behavior. Personality-job-fit theory has also been widely applied in information management studies (Chilton, Hardgrave, & Armstrong, 2005; LeRouge, Nelson, & Blanton, 2006). In addition to the prosperity of personality in academia, the importance of personality attracts managers' attention in practice. For example, IBM, a famous IT company, successfully uses MBTI (a personality framework) to help employees know themselves and reassign suitable jobs for them. One study finds that personality can affect KS among IT professionals (Borges, 2013). Yet, how personality affects in- and extra-role KS among IT professionals has not been investigated.

To further examine the relationships between personality and the two types of KS, this study applies one of the most widely applied personality frameworks in academic research, the five-factor model (FFM) (Costa & McCrae, 1992), to develop its research model. The FFM includes five basic personality traits of human beings: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Some researchers believe that the antecedents of different types of KS are not the same (Zhang & Jiang, 2015). Therefore, it is necessary to treat in- and extra-role KS separately when investigating the effect of personality due to their different natures. For example, in-role KS falls within role expectations, and a cooperative personality can help to increase such behavior. Extra-role KS is proactive and extends beyond role expectations. It is related to the open and creative personality, in addition to the cooperative personality.

The necessity of investigating in- and extra-role KS separately also lies in their probably different effects on team cohesion. KS is tightly related to social relationships, reciprocity, and social capital (Chiu et al., 2006; Yli-Renko, Autio, & Sapienza, 2001). However, whether different types of KS behavior, namely in- and extra-role KS behavior, generate different effects on team-level performance remains in question. Team cohesion refers to the degree to which team members are attracted to each other and how they are motivated to stay in a team (Lin & Peng, 2010). It is a concept that not only reflects the social nature of a team, but is also a salient indicator of team performance. Team cohesion can increase group productivity, especially with high performance norms (Gunnthorsdottir & Rapoport, 2006; Stark, Shaw, & Duffy, 2007). KS can help to strengthen team cohesion by keeping team members together (Greer, 2012). In-role KS, as the expected behavior, lays the foundation for team cohesion while extra-role KS makes an additional contribution to it. Therefore, it is interesting to investigate the effects of in- and extra-role KS on team cohesion.

Overall, this study aims to answer the following research questions.

- Are there two types of KS, that is, in- and extra-role KS, among employees?
- How does the personality of IT professionals affect the in- and extra-role KS among them?
- How do in- and extra-role KS respectively affect IT professionals team cohesion?

This study contributes to the literature by *identifying two types of KS and further verifying their differences by investigating the effects of personality on them and their effects on team cohesion among IT professionals*. First, this study identifies in- and extra-role KS from a new perspective based on role expectations. The conceptualization and operationalization of in- and extra-role KS in this study are generally applicable to professionals in other contexts. Second, this study is a pioneering investigation into the effects of the five personality traits in the FFM on IT professionals' in- and extra-role KS, respectively. The literature lacks research conducted in this line. Third, this study examines the effects of in- and extra-role KS on team cohesion. Its investigation of the consequences of the two types of KS not only makes it comprehensive, but also contributes to the team performance literature. Finally, the findings of this study can assist IT managers/team leaders/decision makers in effectively allocating human resources. An enhanced method for assigning collaborative and innovative projects or routine jobs to employees based on their personalities is provided to increase overall job performance. In addition, enhancing extra-role KS is an effective and efficient way to build a cohesive team and then increase its performance accordingly.

The remainder of this paper is organized as follows. Studies of in- and extra-role behavior and the effect of personality on KS are reviewed in the next section. The research model and hypotheses are then developed based on the FFM in the third section. The research method is described in the fourth section, and the data analysis and results are provided. Finally, the implications for practitioners and academics are discussed and conclusions are given.

2. Literature review

2.1. In- and extra-role behavior and knowledge sharing

The distinction between in- and extra-role behavior is well accepted in the management literature. A role refers to "a set of expected behavior patterns attributed to someone occupying a given position in a social unit" (Robbins & Judge, 2016, p. 319). In an organization, a role is basically defined by its job requirements. People have certain expectations of a specific role. The behavior of the person who takes on the role may/may not meet the role expectations or may sometimes be beyond those expectations. Katz (1964) defined in-role behavior as one part of an employee's work and reflected in the organization's official salary system. Organ (1988) defined organizational citizenship behavior (OCB) as spontaneous behavior that is not clearly established or directly recognized by the organization, but that generally benefits its operation. The concept of extra-role behavior was gradually developed and later defined as "behavior that attempts to benefit the organization and that goes beyond existing role expectations" (Organ, Podsakoff, & MacKenzie, 2006, p. 33). At the same time, the conceptualization of in- and extra-role behavior was also supported by empirical data (O'Reilly & Chatman, 1986; Smith, Organ, & Near, 1983). Extra-role behavior has been found to affect both individual and organizational performance in organizations (Podsakoff, Blume, Whiting, & Podsakoff, 2009).

Sharing more knowledge than required is considered as one of the dimensions to measure extra-role behavior (Organ, 1988; Smith et al., 1983). Therefore, sharing knowledge required by a job description could be regarded as a type of in-role behavior. In-role KS is bound by job descriptions and role expectations by organizations to ensure effective operation. Employees are generally expected to share knowledge by following certain conventions based on their roles in the organization, such as having regular meetings, reporting progress, and training new employees to make sure the work goes smoothly. Extra-role KS extends beyond job requirements and role expectations in that it contributes to knowledge aggregation that further promotes the effective functioning of the organization rather than being directly or explicitly recognized by a formal system. For example, people may

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